The Great Sand Hills
Land Use Strategy Review

Report and Recommendations
June, 2004

FINAL

104-05902/

Great Sand Hills Land Use Strategy Review Report and Recommendations

June 2004

The Honourable David Forbes Minister of Environment	The Honourable Eric Cline Minister of Industry and Resources

Dear Sirs:

We respectfully submit the Great Sand Hills Land Use Strategy Review Report and Recommendations.

The Great Sand Hills Land Use Strategy Review Committee, advisory to the provincial government, was established in August 2002 to conduct the review. The Review Committee included representatives from the provincial departments of Environment; Government Relations and Aboriginal Affairs; Agriculture, Food and Rural Revitalization; and Industry and Resources; the Rural Municipalities of Piapot, Pittville, Fox Valley and Clinworth; and the Great Sand Hills Planning District Commission.

The scope of the review was to consider all land and resource management issues in the planning area and be aware of concerns beyond the limits of the planning area. A large component of the review was to evaluate the effects of the 1991 Great Sand Hills Land Use Strategy.

A series of public meetings provided residents and those with an interest in the Great Sand Hills area with the opportunity to provide input into this review.

The Review Committee appreciated the opportunity to have participated in conducting the review of the Great Sand Hills Land Use Strategy 1991 and developing recommendations for future sustainable land use in the area.

We look forward to having our recommendations for sustainable land and resource management in the Great Sand Hills area implemented.

Original Signed By Kim Clark (Co-Chair) Saskatchewan Environment	Original Signed By Brian Mathieson (Co-Chair) Saskatchewan Industry and Resources

Great Sand Hills Land Use Strategy Review Committee:

Members and contact information

Committee Member	Represented by:	Contact information
CoChairs Great Sand Hills Land Use Strategy Review Committee	Kim Clark Environment Brian Mathieson Industry and Resources	**Phone**: (306) 953-2786 **Fax**: (306) 953-2684 **Email**: kclark@serm.gov.sk.ca **Phone**: (306) 787-2593 **Fax**: (306) 787-2478 **Email**: bmathieson@ir.gov.sk.ca
Great Sand Hills Planning District Commission	Bert Anderson Eleanor Bowie Robert Laing	Box 1504 MAPLE CREEK, SK S0N 1N0 **Phone**: (306) 662-2119 **Fax**: (306) 662-4359
RM of Piapot #110	John Wagner Gerald Sanderson Doug Casey	Box 100 PIAPOT, SK, S0N 1Y0 **Phone**: (306) 558-2011 **Fax**: (306) 558-2125
RM of Pittville #169	Terry Erdelyan Joe McEachern Barry Stock	Box 150 HAZLET, SK, S0N 1E0 **Phone**: (306) 678-2131 **Fax**: (306) 678-2132
RM of Fox Valley #171	Allan Ternes Daniel Buye Paul Tuchscherer	Box 190 FOX VALLEY, SK S0N 0V0 **Phone**: (306) 666-2055 **Fax**: (306) 666-2074
RM of Clinworth #230	Linda Boser Ken Dietz Karl Hubert	Box 120 SCEPTRE, SK, S0N 2H0 **Phone**: (306) 623-4229 **Fax**: (306) 623-4229
Saskatchewan Agriculture and Rural Revitalization	Tim Cheesman Lorne Veitch	(306) 787-5173 (306) 778-8300
Saskatchewan Environment	Robin Hilts Paul James	(306) 778-8329 (306) 787-9058
Saskatchewan Industry and Resources	Ed Dancsok Todd Han	(306) 787-2602 (306) 787-2221
Government Relations	Ralph Leibel Carla Bing-Wo	(306) 787-2893 (306) 787-7704
Recorder	Environment	**Phone:** (306) 778-8442 **Fax:** (306) 778-8212
Correspondence	Great Sand Hills Land Use Strategy Review Committee C/o Saskatchewan Environment 350 Cheadle Street West Swift Current, SK S9H 4G3	

Review Report Summary

Summarized in the **INTRODUCTION** is an overview of the Great Sand Hills (GSH) area, of administration of land uses and development in the GSH since 1991 and of the review process.

Ranching, gas exploration and development and recreational activities are major uses of the area. The provincial Crown owns over 85% of the land, most of which is under grazing lease. All of the Great Sand Hills area is believed to have high potential for natural gas development and the existing gas industry is an important source of revenue for the province and municipalities and jobs for communities near the area.

The reader will see a short overview of the 1991 Great Sand Hills Land Use Strategy (1.1). The Strategy recommended four zones to guide management and development of the GSH. These were: Prime Protection Area; Special Use Area; Multiple Land Use Area and Facility Area. The 1991 Strategy proposed most of the land base as multiple use area where most uses, including gas development and ranching, were permitted, subject to provincial and municipal regulatory procedures. There are currently 36.5 sections withdrawn from Crown mineral lands where no mineral development is allowed. In this document where Prime Protection Areas (PPA) is used the reader is reminded that it refers to those lands identified in the 1991 Strategy that were subsequently 'protected' by withdrawal from Crown mineral lands (known as a Crown mineral reserve).

The advancements subsequent to the Strategy by the provincial agencies, the Rural Municipalities (RM) and the Planning District Commission are discussed (1.2). The goal and objectives of the original Land Use Strategy have been supported by more recent Rural Municipality zoning bylaws. The Great Sand Hills Planning District was established in 1994. It included four RMs: Piapot No. 110, Pittville No. 169, Fox Valley No. 171 and Clinworth No. 230. Identical development plans and zoning bylaws were adopted by the RMs. The evolving Great Sand Hills Planning District Commission's role was to give advice to member RMs, based on the Development Plan and Bylaw, to ensure uniform administration of land use issues amongst member municipalities. The Commission was made of elected officials from the four RMs and a public representative.

The RMs and the province, from 1992 to 1998, expended significant effort to refine the Great Sand Hills Planning District Development Plan and Zoning Bylaw. This work was the basis for the current RM zoning controls, including Agricultural/ Resource (AR), Environmentally Sensitive 1 (ES1) and Environmentally Sensitive 2 (ES2) lands, in the Great Sand Hills Planning District.

The provincial agencies, Environment (SE); Government Relations and Aboriginal Affairs (GRAA); Agriculture, Food and Rural Revitalization (SAFRR); and Industry and Resource (SIR), have a role to play in the management of the area. There is a short discussion outlining the responsibilities of SAFRR, SE, SIR and GRAA (1.3).

In July 2002, the provincial government confirmed that there would be a review of the Great Sand Hills Land Use Strategy (1991). In initiating this review, the province had two principal objectives: to address land use interests in the area, and to ensure that provincial and municipal policies for the area reflect current realities.

The Great Sand Hills Land Use Strategy Review Committee (the Review Committee), advisory to the provincial government, was established in August 2002 to conduct the review. The Review Committee included representatives from the provincial departments of Environment; Government Relations; Agriculture, Food and Rural Revitalization; and Industry and Resources; the Rural Municipalities of Piapot, Pittville, Fox Valley and Clinworth; and the Great Sand Hills Planning District Commission. Please see Appendix D for an overview of the review process.

The scope of the review was to consider all land and resource management issues in the planning area and be aware of concerns beyond the limits of the planning area. A large component of the review was to evaluate the effects of the 1991 Great Sand Hills Land Use Strategy. The Review Committee completed an evaluation of the objectives and recommendations in the 1991 Strategy.

The **EVALUATION OF THE STRATEGY'S IMPLEMENTATION** (section 2) discusses how well the 1991 Strategy has met its goal, objectives and recommendations. The Goal for the 1991 Strategy was: To maintain the Great Sand Hills as a distinctive landscape for social, cultural and economic benefits.

The Review Committee completed an evaluation of the implementation of the original 1991Great Sand Hills Land Use Strategy. The Review Committee in general found that implementation of this strategy was successful. They recognize the tremendous effort by the Great Sand Hills Planning District Commission, the four Rural Municipalities and the provincial agencies over the past 12 years to make it a success. They also acknowledge that a great deal of the success of land use administration is credited to the local people who have a strong bond and familiarity with the area. Particularly, the Review Committee recognizes the work of those who are elected and accountable to represent all of the local interests. It is a time consuming responsibility to be a member of a municipal council. In an area as complex as the Great Sand Hills, the duties and responsibilities are all the greater.

The Review Committee recommends that the 1991 Strategy continue to be built upon to address ongoing and evolving issues in the harmonization of processes and procedures that have been adopted by the municipal and provincial governments. It has been found that environmental requirements that were innovative in 1991 are now standard practices. The advance of technology and accumulation of experience mean operational practices today often exceeded standards described in the Strategy. The Review Committee's evaluation shows that the objectives and recommendations of the 1991 Strategy have been mostly achieved (35 objectives and 77 recommendations) in the attempt to find balance between environmental preservation and economic development.

The third section, **DISCUSSION:** ***The Great Sand Hills today***, provides the reader with the context of how the review committee has arrived at its recommendations. Common themes regarding consistency, balance, and particularly, clarity emerged during the Strategy review process. Many people were able to agree that a balanced approach, an approach that addresses economic, human, and environmental needs, was important to managing the GSH. This approach supports the conclusion that there are some areas in the Great Sand Hills that can be developed but that other areas warrant an enhanced and clearly defined level of protection.

Information received by the Review Committee through written and verbal presentations, public meetings and workshops and reference material has been examined. The review committee's consultations and research have identified concerns that range from a general philosophical perspective to very specific scientific or technical questions. Concerns were identifiable in major themes: environmental/ecological; ranching/grazing; zoning/land use administration; operations – specific to gas development and access to resources. There is a detailed discussion of the issues and concerns. This section also includes analyses that are the basis for the Review Committee's recommendations.

The Review Committee discussed what process or administrative model could be used to implement recommendations. The Review Committee identified 6 scenarios that were brought forward for further public consultation as the beginnings of possible recommendations. At the public workshops held May 27, June 2 and 5, 2003, members of the public elaborated further or more specifically on the initial ideas from the Review Committee and also proposed additional scenarios. The six initial options were: status quo; status quo plus adjustments; expansion of the 1991 PPAs; enhanced or changed role for formalized structures; multi-use scenario; and start over (true socio economic and biophysical study).

The fourth section, **RECOMMENDATIONS AND PRINCIPLES FOR IMPLEMENTATION**, presents the Review Committee's draft recommendations and a discussion of potential options to implement them.

The Review Committee has identified the following nine areas of interest and has proposed a number of recommendations for each: protected lands – increase size and protection; zoning outside of the additional and existing protected lands; environmental assessment; ecological monitoring; grazing – minimize 'footprint'; gas developments – minimize 'footprint'; conserve wildlife and biodiversity; conserve air and water resources; and administrative procedures.

Protected Lands (PLs)[1] – increase size and protection

1. Add additional lands to the 1991 PPA's.
    a. The Committee recommends lands roughly three times the current PPA area (which is 36.5 sections of Crown land) be identified for protected lands designation.
2. Establish the additional lands, wherever possible, adjacent to and in combination with those PPAs identified in the 1991 Strategy. There were four areas identified as PPAs in 1991: Yakowan 12 sections; Rastad 21 sections; Wachiwan 1/2 section; and Straw Road 3 sections. Additional lands should be added to each one of these existing PPAs to increase their size.
3. Include ecological representivity in the process of identifying protected lands.

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[1] **"protected land"** means land or area that is or has been identified for high levels of management restriction. The Review Committee recommends that these lands or areas should receive designation under provincial legislation to restrict industrial development both on the surface and the subsurface.

4. Designate surface and subsurface control with provincial-level legislation.
5. Use the new identified lands and 1991 PPA's in combination as one of the benchmarks for ecological monitoring.
6. Confirm the land uses that may be permitted within protected lands.

Zoning Outside of the Additional and Existing Protected Lands

1. Clearly identify and define areas outside the additional and existing protected lands;
2. Consider the area environmentally sensitive and not lessen environmental protection planning. Processes established by the Great Sand Hills Planning District Development Plan and Zoning Bylaw will be supported. In the absence of scientific understanding, the utilization of ES1 and ES2 zoning should be continued;
3. Continue the practice of coordinating environmental standards with provincial;
4. Strive to achieve the most up to date environmentally responsible technologies for specific development standards;
5. Support the RMs and Great Sand Hills Planning District Commission with resources (expertise and funding) to improve their abilities to provide good management under an agreed plan of action;
6. Every person before commencing any development within the municipality shall complete an application for a Development Permit; and
7. SIR continue to consult with the RM prior to posting the environmentally sensitive subject land in the "Public Notice Sale of Saskatchewan Crown Petroleum and Natural Gas Disposition" notice.

Environmental Assessment

1. Conduct an environmental impact assessment, which sets the basis for a comprehensive implementation plan, for long-term management for the Great Sand Hills.
2. Include within the environmental impact assessment, among other things, consideration of baseline biophysical information, cumulative impacts, linear developments, ecological disruption tolerances, reclamation potentials and socio-economic impacts.
3. Involve land users and those with an interest in the environmental impact assessment process
4. Ensure that existing and new spatial information on roads, trails, dugouts, well pads, and pipelines is collected and centrally deposited and stored for access by the appropriate regulatory agencies and proponents of development.
5. Contribute to the updating of management policies and more refined map delineation in the Great Sand Hills Planning District Development Plan and Zoning Bylaw.

Ecological Monitoring

1. Establish a comprehensive program that monitors ecological integrity by establishing appropriate indicators and benchmark areas for future comparisons.
2. Undertake an invasive plant study every five years.
3. Employ qualified Environmental Monitors who report to land owner/manager to oversee developments (enforce provincial and municipal environmental protection plan obligations).
4. Support (either financial or in-kind) small land users to ensure that an equivalent level of management is accorded without imposing onerous requirements that could inhibit

advances in stewardship practices on their part (e.g., replacement of dugouts with modern wells and controlled-watering facilities)

Grazing – minimize 'footprint'

1. Encourage the continued development and implementation of techniques that minimize surface disturbance from grazing.
2. Encourage the completion and implementation of range management plans on a ranch basis, as resources are available.
3. Jointly develop and implement a strategy with industry partners and other agencies to control and/or eradicate invasive, non-native plants.
4. SAFRR to review the compensation payment to ranchers for gas developments on leased lands (perhaps increased sharing of revenue directed at stewardship initiatives which benefit this sensitive area.)

Gas Developments – minimize 'footprint'

1. Develop and implement a comprehensive access management plan that minimizes surface disturbance. This could mean proponents would share infrastructure.
2. Encourage the use of special drilling techniques such as multi-pad and/or directional drilling as appropriate to avoid unnecessary environmental damage.
3. Streamline processes by reducing redundancy and creating clarity for reporting in reclamation and enforcement procedures.
4. Encourage reclamation projects that would begin to build an information base for successful long-term reclamation.
5. Require gas industry to complete timely environmental planning and where lands are deemed inoperable the surface then could be identified for no surface access or designated as protected lands.

Conserve Wildlife and Biodiversity

1. Conduct surveys for rare and endangered species.
2. Establish reclamation standards that include the use of appropriate native plants.
3. Assess the need to increase or decrease hunting opportunities.
4. Ensure that steps are taken to manage the risk of wildfires.

Conserve Air and Water Resources

1. Understand the groundwater resources contained within the Great Sand Hills.
2. Develop and implement a water management strategy.
3. Understand the impacts of all forms of airborne pollution.

Administrative Procedures

1. Identify lead and support agencies for each recommendation brought forward.
2. Establish an advisory or formalized administrative board that reflects land user interest and, in the majority, local administration.
3. Establish timelines for follow up to ensure recommendations brought forward are completed.
4. Establish a communications strategy to ensure area residents and others are kept informed.

5. Make adequate resources available to carry out these recommendations.

The Review Committee in section 5, **SUMMARY**, does not recommend any single option for implementation. It is the Review Committee's opinion that a combination of options can better serve to manage the ecological sensitivities and complexities of the Great Sand Hills. See Appendix H for a listing and analysis of the implementation options that have been discussed during the review.

Further, the Review Committee believes that any decision by government for implementation of their recommendations must address these important principles: longevity; permanence; informed management decisions; local partnerships; public involvement; compliance and enforcement; and dedicated resources.

Principle of Longevity

Longevity, or prolonged existence in this case, is the time between land use and resource management policy reviews and changes. In order to stand the test of time, in addition to the specific recommendations above, the provincial government's implementation decision must include a clear understanding of the roles and responsibilities of administrators and landowners; of proponents and lessees and of staff personnel and elected officials.

Principle of Permanence

Permanence, or the ability to withstand change, particularly policy changes, is important to address. To provide more permanence the committee suggests that the provincial government use current and/or future Acts and Regulations to designate and administer protected lands in the review area.

Principle of Informed Management Decisions

The committee in its early formation recognized that a contributing factor to conflict in the Great Sand Hills area was a lack of scientific knowledge regarding the overall ecological impact by a variety of land uses on the sand hills ecosystem. Research into natural resource use and impacts from development, gas and ranching, and tourism will strengthen long-term management of the Great Sand Hills area.

Principle of Local Partnership

The Committee believes that people most impacted by land use and resource management decisions must be meaningfully involved in those decisions. The committee recommends that government continue with and strengthen partnerships with the municipalities for local area management.

Principle of Public involvement

The committee recommends that public involvement continue to be an important component of decision-making in the Great Sand Hills area. The RMs and provincial governments should continue to bring a public perspective to their decision processes.

Principle of Compliance and Enforcement
The committee recommends that the government address the perceived inability of government to respond convincingly to environmental situations. There is also an opportunity here to strengthen provincial and municipal enforcement efforts through alignment of roles and responsibilities.

Principle of Dedicated Resources
It will take significant resources to implement these recommendations. Resources, as much as possible, should be identified and dedicated to the implementation of these recommendations. It will not be possible for the government, the municipalities or the industries to do this alone. In order to provide the best management for the Great Sand Hills area partnerships must be fostered and formed.

In the end, the implementation recommendation will recognize the partnership between the provincial and municipal (local) authorities for management of the area. A combination of the following features:

- one environmental impact assessment for the area,
- the formation of either an advisory or formalized administrative board, and
- a comprehensive implementation plan for the area

will give direction for land use and resource management in the Great Sand Hills area.

Anticipating that government will take a decision to implement these recommendations and principles, the Review Committee has considered the following:

In the short-term:

a) For the additional and existing protected lands, immediately:

- designate under provincial legislation
- define allowable land uses in regulation
- describe environmental practices in regulation
- describe enforcement abilities in regulation
- identify advisory and public interests

b) For the interim period prior to government decision and an environmental impact assessment

- Utilize established directions and approval processes for areas outside new protected lands

c) Conduct an environmental impact assessment

In the medium-term:

- Clarify roles and responsibilities of provincial agencies and municipal councils
- Create and formalize partnership (a board) between provincial agencies and municipal councils for management of Great Sand Hills area
- Identify the responsibilities of the board to enable management the Great Sand Hills area

And, In the long-term:

- Prepare provincial land use policy that would clarify the provincial role in development decisions by providing clear direction to municipalities, industry groups and the public.

The Review Committee has heard from many interests and most of the concerns that have been raised are properly within the Review Committee's Terms of Reference. There are issues identified in section 6 that are **OUTSTANDING ISSUES BEYOND THE SCOPE OF THE REVIEW** and simply cannot be addressed by the Review Committee. These are noted in this report because they were brought forward by public, industry, environmental, municipal and provincial interests.

Great Sand Hills Land Use Strategy Review Report and Recommendations

Section **Page**

Great Sand Hills Land Use Strategy Review letter from Review Committee i
Great Sand Hills Land Use Strategy Review Committee members ii
Review Report Summary iii

Table of Contents xi

1.0 Introduction 1
  1.1 1991: The Great Sand Hills Land Use Strategy 1
  1.2 1992 – 2002: Municipal roles in the Great Sand Hills 3
  1.3 Provincial roles in the Great Sand Hills 3
  1.4 2002: Review of the Great Sand Hills Land Use Strategy is initiated 5

2.0 Evaluation of the Strategy's implementation 7

3.0 Discussion: The Great Sand Hills today 11
  -Discussion of and response to issues and concerns heard by Review Committee
  3.1 Environmental concerns 11
    - Environmental project review process 11
    - Ecological impact 13
    - Environmental management 14
    3.1.1 Environmental needs analysis 15
  3.2 Ranching / Grazing 16
    3.2.1 Ranching considerations 16
  3.3 Zoning / land use administration 18
    3.3.1 Municipal considerations 19
  3.4 Industry – resource extraction 21
    3.4.1 Operational concepts for consideration 22
  3.5 Access to resources 24
    3.5.1 Accessibility concepts for consideration 25
  3.6 Public workshops 26
    3.6.1 Status quo 26
    3.6.2 Status quo plus adjustments 26
    3.6.3 Expansion of Prime Protection Areas (identified in 1991 Strategy) 27
    3.6.4 Enhanced or changed role for formalized structures 28
    3.6.5 Multi-use scenario 28
    3.6.6 Start over – true socio economic and biophysical study 28

4.0 Recommendations and principles for implementation 30
  4.1 Recommendations: 30
    4.1.1 Protected lands 30
    4.1.2 Zoning outside of the additional and existing protected lands 31
    4.1.3 Environmental assessment 31

4.1.4 Ecological monitoring 32
4.1.5 Grazing – minimize 'footprint' 32
4.1.6 Gas developments – minimize 'footprint' 33
4.1.7 Conserve wildlife and biodiversity 33
4.1.8 Conserve air and water resources 33
4.1.9 Administrative procedures 34
4.2 Looking towards the future 34
4.2.1 Principle of Longevity 34
4.2.2 Principle of Permanence 35
4.2.3 Principle of Informed management decisions 35
4.2.4 Principle of Local partnership 36
4.2.5 Principle of Public involvement 36
4.2.6 Principle of Compliance and enforcement 36
4.2.7 Principle of Dedicated resources 36

5.0 Summary 37

6.0 Outstanding issues beyond the scope of this review 38

APPENDICES

A. Biophysical characteristics of the Great Sand Hills area A1
B. Glossary B1
C. Analysis, by Review Committee, of goal, objective and recommendation found in 1991 Strategy C1
D. Review process D1
E. Evaluation ratings from Review Committee members (Provincial departments and RMs of Clinworth, Fox Valley, Piapot, and Pittville) E1
F. Workshop compilation F1
G. Development approval processes administered by provincial and municipal governments G1
H. Summary of options for land use and resource management in the Great Sand Hills that have been discussed by Review Committee H1

List of Figures
Figure 1: Great Sand Hills Land Use Strategy Review area 2

List of Tables
Table 1: Summary (Evaluation of the implementation of the Great Sand Hills Land Use Strategy) 7
Table 2: Qualitative criteria for rating recommendations, objectives and goal 8
Table 3: Summary of rating for Implementation Section 4.0 (pg 64-67) of original Great Sand Hills Land Use Strategy- 1991 9

1.0 INTRODUCTION

The Great Sand Hills area, a unique and sensitive region of southwestern Saskatchewan, is located between the Trans-Canada Highway and the South Saskatchewan River just north and east of the town of Maple Creek. Appendix A, excerpted from the Great Sand Hills Land Use Strategy, 1991, provides more detail regarding biophysical characteristics of the Great Sand Hills area. The area is rich in flora and fauna including endangered and rare species, and species unique to the sand hills ecosystem. This area has more or less continuous surface deposits of unconsolidated sands. Climatic and soil conditions have combined to create many interesting landforms. The Great Sand Hills area contains the largest contiguous area of dunes on the Canadian prairie. Large, active sand dunes are one of the most spectacular land features of the Great Sand Hills but represent only a small fraction of the review area. The area is recognized as a nationally, provincially and locally significant natural area, and is a growing tourist attraction. Please see Figure 1 for the area covered by the review and the general location of the Great Sand Hills. A glossary, Appendix B, will be helpful for readers not fully familiar with terms used is this report or that have be used in the review process.

Ranching, gas exploration and development, hunting and recreational activities are major uses in the area. The provincial Crown owns over 85% of the land, most of which is under grazing lease or community pasture. Much of the Crown land is also designated under *The Wildlife Habitat Protection Act* (WHPA).

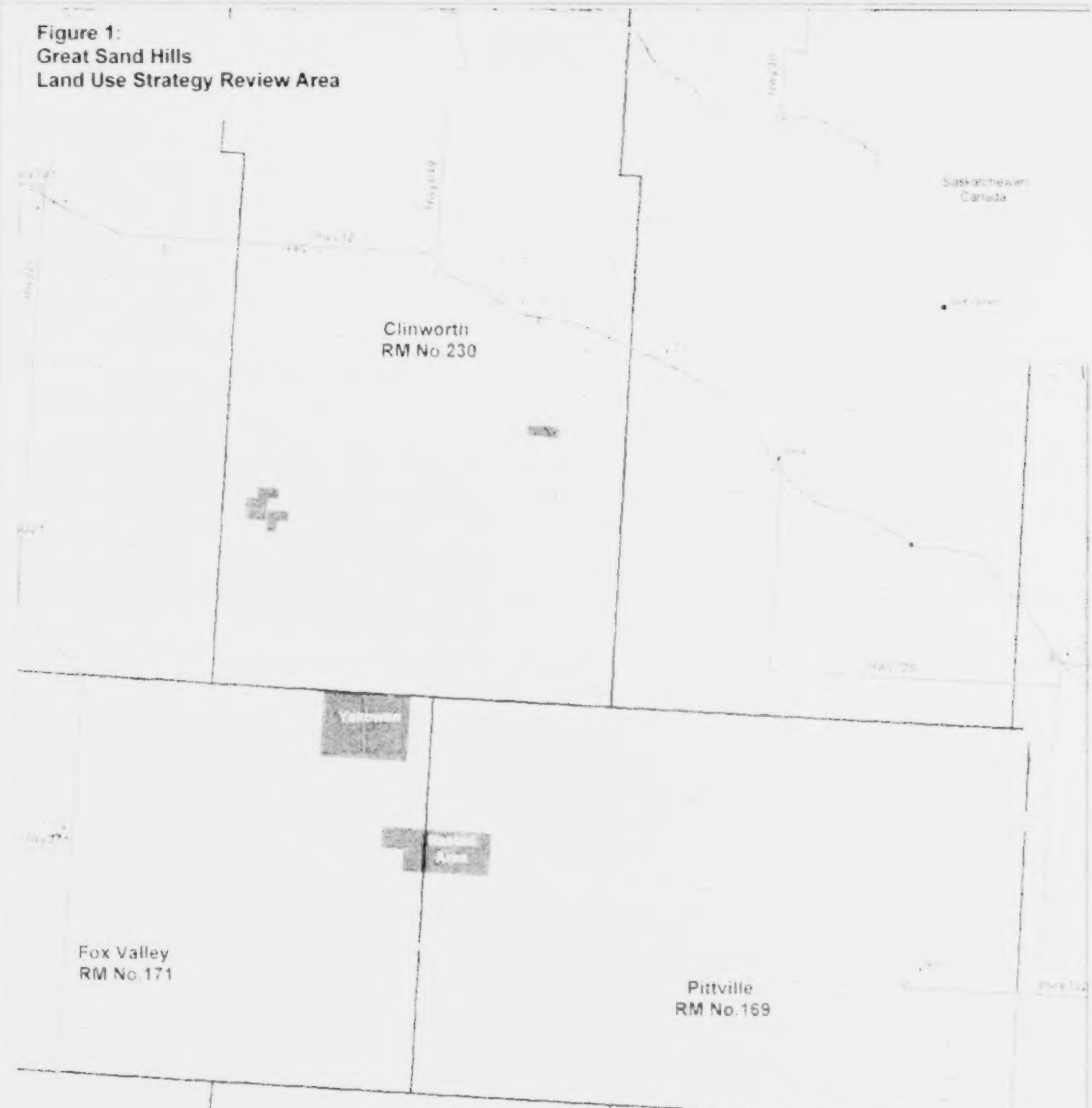
All of the Great Sand Hills area is believed to have high potential for natural gas development and the existing gas industry is an important source of revenue for the province and municipalities. Indeed, if it were not for employment related to the gas industry, some communities in the area may not exist. Of the review area, 63% is under various forms of mineral lease (gas primarily). Development of these minerals to date has been for shallow natural gas.

1.1 1991: *The Great Sand Hills Land Use Strategy*

In 1990 –1991, a provincial land use planning effort was undertaken to reconcile competing views regarding land use in the Great Sand Hills. The resultant *Great Sand Hills Land Use Strategy* (1991) was adopted as policy by the province.

The Strategy recommended four zones to guide management and development of the GSH. These were: Prime Protection Area; Special Use Area; Multiple Land Use Area and Facility Area. Most of the land base, in 1991, was proposed as multiple use area where most uses, including gas development and ranching, were permitted, subject to provincial and municipal regulatory procedures. There are currently 36.5 sections withdrawn from Crown mineral lands where no mineral development is allowed. These lands consist of components of the prime protection areas and the special use areas identified in 1991. Prime Protection Areas (PPA) refers to the lands identified in the 1991 Strategy and subsequently 'protected' by withdrawal from Crown mineral lands (known as a Crown mineral reserve).

**Figure 1:
Great Sand Hills
Land Use Strategy Review Area**


Saskatchewan
Canada
Clinworth
RM No.230
Hwy 32
Fox Valley
RM No.171
Pittville
RM No.169
Piapot
RM No.110
Legend

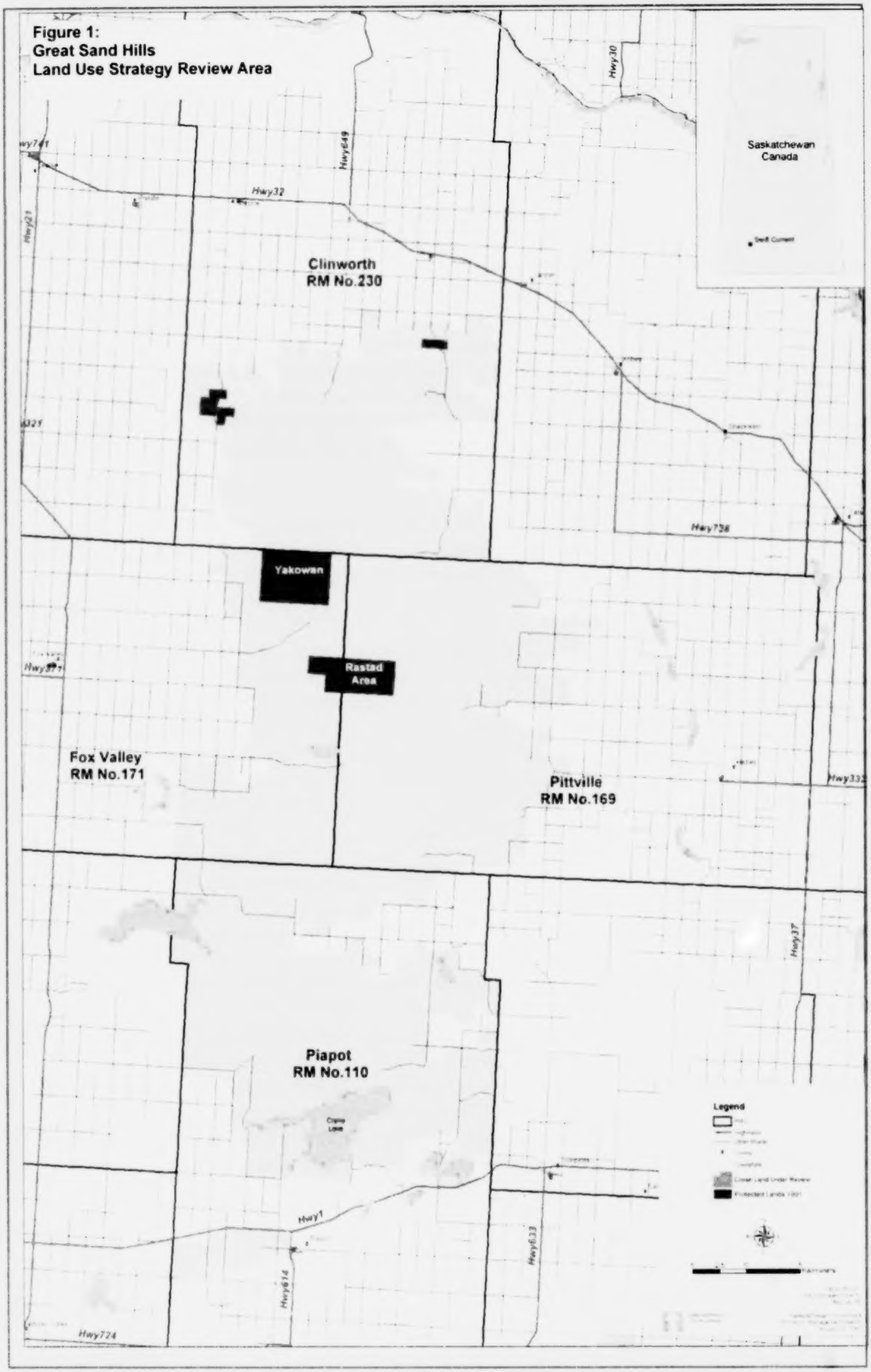


**Figure 1:
Great Sand Hills
Land Use Strategy Review Area**

Saskatchewan
Canada
Swift Current
Hwy741
Hwy21
Hwy32
Hwy649
Hwy30
Hwy321
Clinworth
RM No.230
Hwy738
Yakowan
Rastad
Area
Hwy371
Fox Valley
RM No.171
Pittville
RM No.169
Hwy332
Hwy37
Piapot
RM No.110
Hwy1
Hwy614
Hwy633
Hwy724
Legend
Crown Land Under Review
Protected Lands 1991
Kilometers

1.2 1992 – 2002: Municipal Roles in the Great Sand Hills

The goal and objectives of the original Land Use Strategy for the Great Sand Hills have been supported by more recent Rural Municipality (RM) land use bylaws. The Great Sand Hills Planning District Commission (the Commission), a direct outcome of the 1991 Strategy recommendations, was established in 1994. It included four RMs: Piapot No. 110, Pittville No. 169, Fox Valley No. 171 and Clinworth No. 230. Identical development plans and zoning bylaws were adopted by the RMs. The evolving Great Sand Hills Planning District Commission's role was to give advice to member RMs, based on the development plan and zoning bylaw, to ensure consistent administration of land use issues among member municipalities. Although the R.M. of Piapot No. 110 withdrew from the Commission in 2001, they still administer the same development plan and zoning bylaw as the remaining RM members of the Commission.

The RMs and the province, from 1992 to 1998, expended significant effort to refine the Great Sand Hills Planning District Development Plan and Zoning Bylaw. This work was the basis for the current RM zoning controls, including Agricultural/ Resource (AR), Environmentally Sensitive 1 (ES1) and Environmentally Sensitive 2 (ES2) lands, in the Great Sand Hills District.

The Great Sand Hills Planning District Development Plan and Zoning Bylaw outline a process for reviewing a development proposal. Municipal procedure requires rezoning of ES1 to ES2 before a development on ES1 zoned land could be approved by RM council. Within the ES2 zones, development may be allowed at the RM's discretion. If a project received provincial environmental approval and was consistent with the criteria outlined in the Development Plan, the RM would consider amending the bylaw (i.e. change the zoning from ES1 to ES2) to accommodate site specific development. This process is consistent with the original 1991 Strategy and provincial policy with respect to environmental management. Provincial environmental approval is also required before any development can proceed in either ES1 or ES2 zones. It has been noted that, for the most part, existing Rural Municipal development processes do work in balancing environmental and resource land uses and have been successful in managing development in the Great Sand Hills.

1.3 Provincial Roles in the Great Sand Hills

In addition to the municipality and advice of the Commission (where applicable), developments in the Great Sand Hills area may also require approval from several provincial departments. The provincial departments, municipalities and Commission have striven to find balance by facilitating the many developmental procedures while encouraging developers to improve standards since the original strategy's implementation in 1991.

More specifically, since most of the area consists of Crown land, Saskatchewan Agriculture, Food and Rural Revitalization (SAFRR) has a significant role. SAFRR administers all agricultural Crown land in the province with over 10,000 agricultural leases under the provisions of *The Provincial Lands Act and Regulations*. It also administers gas surface dispositions, such as surface leases, on Crown land. SAFRR ensures developers are aware of their environmental responsibilities when developing on Crown land; reviews all applications for surface leases and pipeline easements and issues an agreement to gas companies; issues release of the surface agreement once all restoration requirements are met; pays lessee compensation; and addresses lessee concerns. SAFRR also produces several information guides both of an agricultural and a gas related nature, such as *Restoration for Saskatchewan's Agricultural Crown Rangelands* to assist developers.

Additionally, several provincial environmental acts apply. Saskatchewan Environment (SE) administers *The Environmental Assessment Act*, under which certain activities, such as gas extraction, may need to undertake detailed project planning to receive clearance through an *Environmental Protection Plan* or ministerial approval through an *Environmental Impact Assessment*. Required project details include such information as potential impacts on wildlife, water sources or rare and endangered species; construction methods; access routes; waste management; and environmental monitoring.

Between 1991 and 1996, prior to the adoption of the ES1 and ES2 zones in 1998, there were four Ministerial Approvals issued by the province pursuant to *The Environmental Assessment Act* for specific gas development scenarios. These previously approved gas projects in ES1 and some ES2 areas may proceed subject to site-specific environmental protection plans and criteria.

Saskatchewan Industry and Resources (SIR) administers the sale or lease of Crown minerals; regulates, and monitors all aspects of the upstream gas industry up to the refinery gate; approves well and facility abandonment as per *The Oil and Gas Conservation Regulations, 1985*; and issues drilling and exploration licenses and explosive permits. As policy, SIR has supported the environmental policies of the area by withholding the posting of new mineral sales until such time as municipalities have agreed that re-zoning can occur because environmental criteria can be met.

Government Relations and Aboriginal Affairs (GRAA) currently administers *The Planning and Development Act, 1983*. If a Rural Municipal bylaw amendment is required, it must be approved by GRAA. Municipalities may also call on the department for assistance with bylaw interpretation or administrative questions under this act.

The Great Sand Hills is an area of historical and archeological significance as well as environmental uniqueness. Development projects need to address requirements under *The Heritage Property Act*, which is administered by the Heritage Resources Unit of Saskatchewan Culture, Youth and Recreation (CYR). "Heritage Property" is broadly defined as archaeological objects, paleontological objects, and any property or site that is of interest for its architectural, historical, cultural, environmental, archaeological, paleontological, aesthetic or scientific value. Proposed developments must be submitted to CYR to be screened for their potential to adversely affect heritage property.

Each of the departments produces guidelines to explain the applicable regulatory procedures. Developers are able to contact the various departments concurrently in order to meet all requirements of the area in a coordinated manner. Each of the agencies involved tries to ensure that developers are made aware of all the regulatory requirements that may apply. Further details on the provincial roles, activities and initiatives can be found in the Appendix C.

1.4 2002: Review of *The Great Sand Hills Land Use Strategy* is Initiated

In July 2002, the provincial government initiated a review of the Great Sand Hills Land Use Strategy (1991). Figure 1 shows the area considered by the review. In initiating this review, the province had two principal objectives: to address land use interests in the area and to ensure that provincial and municipal policies for the area reflect current realities.

Initiating a review of the Great Sand Hills Land Use Strategy was supported by the fact that there were recurring land use and environmental concerns. These arose from the demand for expansion of resource development, increase in other land uses and a recognized interest in protecting the integrity of this unique area. During the course of the review it became apparent that these concerns were influenced by:

- The province's *Great Sand Hills Land Use Strategy (1991)* has not been formally reviewed or updated since its implementation. A periodic review process was not specified in the Strategy.
- A lack of scientific knowledge regarding the overall ecological impact by a variety of land uses on the sand hills ecosystem.
- The current municipal processes for project development were not always clearly understood. For example, it is not common knowledge that developments may proceed if specific environmental criteria are met and where necessary the bylaw has been amended.
- Mineral right holders desire to either develop, or at some point be compensated, if they are denied access to development opportunities that were granted by the province prior to the adoption of the municipal zoning.
- The demand for the sale of new mineral leases would provide economic benefits to both the municipalities and the province.

The Great Sand Hills Land Use Strategy Review Committee (the Review Committee), advisory to the provincial government, was established in August 2002 to conduct the review. The Review Committee included representatives from the provincial departments of Environment; Government Relations; Agriculture, Food and Rural Revitalization; and Industry and Resources; the Rural Municipalities of Piapot No. 110, Pittville No. 169, Fox Valley No. 171 and Clinworth No. 230; and the Great Sand Hills Planning District Commission. Please see Appendix D for an overview of the review process.

The scope of the review was to consider all land and resource management issues in the planning area and be aware of concerns beyond the limits of the planning area. A large component of the review was to evaluate the effects of the 1991 Great Sand Hills Land Use Strategy. The Review Committee completed an evaluation of the objectives and recommendations in the 1991 Strategy (Review Committee Report 030416).

The review considered a wide range of issues including ecological impacts of land use activities; administrative harmonization; lifestyle concerns and land management and accessibility for industrial development. It provided an opportunity for all stakeholders in the Great Sand Hills area, as well as interested members of the public, to participate. The Review Committee received written submissions, heard oral presentations and conducted open forums and workshops.

2.0 EVALUATION OF THE STRATEGY'S IMPLEMENTATION

The Review Committee completed an evaluation[1] of the implementation of the original 1991Great Sand Hills Land Use Strategy. The Review Committee has used the evaluation, in part, in the formation of their recommendations for future land use and resource management in the Great Sand Hills area. The Review Committee's evaluation found that implementation of this strategy was successful (see Table 1).

TABLE 1: Summary
(Evaluation of the implementation of the Great Sand Hills Land Use Strategy)

Goal, Objectives and Recommendations (# of)	Evaluation rating			
	0 – 5% Not Started	6-50% Something Started	51-90% Mostly Complete	91-100% Complete
Overall Land Management (Section 1.2)				
Goal (1)			√	
Objectives (5)			√	
Prime Protection Areas (Section 3.1.1)				
Objectives (4)			√	
Recommendations (4)			√	
Grazing Management (Section 3.2)				
Objectives (5)			√	
Recommendations (6)			√	
Oil and Gas Exploration and Development (Section 3.3)				
Objectives (3)			√	
Recommendations (16)			√	
Wildlife Management (Section 3.4)				
Objectives (3)			√	
Recommendations (9)			√	
Tourism (Section 3.5)				
Objectives (2)			√	
Recommendations (7)			√	
Archaeological Resources (Section 3.6)				
Objectives (3)			√	
Recommendations (5)			√	
Groundwater Resources (Section 3.7)				
Objectives (3)			√	
Recommendations (9)			√	
Utility Corridors (Section 3.8)				
Objectives (1)				√
Recommendations (8)			√	
Reclamation (Section 3.9)				
Objectives (3)				√
Recommendations (5)			√	
Vehicle Access (Section 3.10)				
Objectives (1)			√	
Recommendations (5)			√	
Implementation (Section 4.0)				
Objectives (2)			√	
Recommendations (3)				√

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[1] Review Committee Report 030416. Evaluation of the Great Sand Hills Land Use Strategy (1991). Please se web page: http://www.se.gov.sk.ca/ecosystem/land%20use/default.asp.

The Review Committee recognizes the tremendous effort by the Great Sand Hills Planning District Commission, the four Rural Municipalities and the provincial agencies over the past 12 years to make the 1991 strategy a success. They also acknowledge that a great deal of the success of land use administration is credited to the local people who have a strong bond and familiarity with the area. Particularly, the Review Committee recognizes the work of those who are elected and accountable to represent all of the local interests. It is a time consuming responsibility to be a member of a municipal council. In an area as complex as the Great Sand Hills, the duties and responsibilities are all the greater.

The 1991 Strategy did not include a defined review and amending process. It did have a goal, several objectives, and many specific recommendations directed at land use and resource management. The Review Committee has qualitatively assessed (rated what has been done) the goal, objectives and recommendations from the 1991 strategy. The ratings by the Committee members were surprisingly consistent given the qualitative nature of the rating process. Please see Appendix E for the Review Committee's ratings for the various objectives and recommendations.

A worksheet was developed to provide a common benchmark from which the evaluation was conducted. The worksheet included the original recommendations, objectives and goal from the 1991 strategy. The short question of 'What has been done?' was the basis for the responses by the Review Committee in rating each of the recommendations and objectives (see Table 2 for rating criteria).

TABLE 2: Qualitative criteria for rating recommendations, objectives and goal

Ratings	
Not Started	: (0 to 5%) Little if anything has been done with the recommendation/objective
Something Started	: (6 to 50 %) Something has been done with recommendation/objective but more is needed
Mostly Complete	: (51 to 90%) Much of the recommendation/objective has been implemented but more should be done
Complete	: (91 to 100 %)The recommendation/objective has been mostly followed to completion

Section 4.0, Implementation, of the original Strategy spoke to addressing objectives; to a commitment to consultation and coordination; and to the formation of a planning district. Table 3 provides a summary of how the Review Committee rated the objectives and recommendations related to implementation of the 1991 Strategy.

TABLE 3: Summary of rating for Implementation Section 4.0 (pg 64-67) of original Great Sand Hills Land Use Strategy- 1991

Implementation (Section 4.0, pg 64-67 of original strategy)	**0 – 5% Not Started**	**6-50% Something Started**	**51-90% Mostly Complete**	**91-100% Complete**
Recommendation: 1. The Great Sand Hills Land Use Strategy should be adopted as departmental policy, by those provincial agencies with identified interests and mandates in the study area. This would include a commitment to consultation and the coordinated management of land use and environmental concerns. **Rate:** 100%				√
Recommendation: 2. The establishment of a planning district or authority is recommended to provide a means of ensuring coordinated and consistent land use management at the municipal level, and to provide a mechanism for the consideration, accommodation and/ or mediation of various public and private interests. **Rate:** 100%				√
Recommendation: 3. Rural Development should provide direction and assistance to the Rural Municipalities which administer land in the Great Sand Hills in establishing a local municipal development authority or district. The municipal authority or district should develop and implement local land use management plans and zoning bylaws that are consistent with the Great Sand Hills Land Use Strategy. **Rate:** 93.75%				√
Objective: To ensure that the goals, objectives and policies articulated in this land use strategy are properly and adequately addressed. **Rate:** 62.5%			√	
Objective: To ensure that strategy implementation involves a commitment to consultation and coordination among affected provincial agencies, municipal governments, advocacy groups, residents and land-users. **Rate:** 87.5%			√	

Gas and ranching industries, in particular, have contributed to the success of the implementation of the 1991 Strategy. In doing so, industry has become knowledgeable about the Commission, municipal and provincial processes and vice versa, and the groups now meet regularly. This has facilitated an information exchange and education for all parties. It is noteworthy that the standard operating procedures of many proponents are consistent with the objectives of the Great Sand Hill Planning District Development Plan. This consistency points to very successful initiatives in gas development and operations, grazing management and administrative structure.

The Review Committee recommends that the 1991 Strategy continue to be built upon to address ongoing and evolving issues in the harmonization of processes and procedures that have been adopted by the municipal and provincial governments. It has been found that environmental requirements that were innovative in 1991 are now standard practices. The advance of technology and accumulation of experience mean operational practices today often exceeded standards described in the Strategy. The Review Committee's evaluation shows that the objectives and recommendations of the 1991 Strategy have been mostly achieved (35 objectives and 77 recommendations) in the attempt to find balance between environmental preservation and economic development.

There is more work to be done. To this end, the Review Committee recommends that those with administrative and management responsibilities in the Great Sand Hills area continue to consider biological diversity and ecological representivity in resource management decision-making processes. It is not an easy task to balance the many and varied interests that co-exist in this area. Where appropriate, significant levels of protection for the surface of the land should be addressed while economic development is given the opportunity to show responsible use of the land.

Other areas in which the Review Committee offers recommendations are: linear access planning, ecological research, reclamation, monitoring, communications and resources (both fiscal and human).

3.0 DISCUSSION: *The Great Sand Hills today*

Discussion of and Response to Issues and Concerns heard by the Review Committee

The Review Committee's consultations and research have identified concerns that range from a general philosophical perspective to very specific scientific or technical questions. It must be appreciated that the following discussion is also dynamic, like its subject matter, and that some circumstances that change over time may cause some of the concerns to be reinforced, or be replaced by others. This review of the 1991 Great Sand Hills Land Use Strategy may be considered a check-point to reflect upon the directions that established the current procedures for management of the Great Sand Hills and consider possibilities for the future. Common themes regarding consistency, balance, and particularly clarity emerged during the Strategy Review process. Many people were able to agree that a balanced approach to managing the GSH was important, an approach that addresses economic, human, and environmental needs. This approach supports the conclusion that there are some areas in the Great Sand Hills that can be developed but that other areas warrant an enhanced and clearly defined level of management. Perhaps the best summary of the advice received by the Review Committee was one person's observation that all land uses in the area should be done in a manner that "does as little harm as possible."

3.1 Environmental Concerns

Environmental Project Review Processes

There are environmental regulations and procedures in place through the various provincial departments and the GSH Planning District bylaws that provide significant environmental protection for the area with respect to gas development[2]. In addition to the municipality and advice of the Commission, all gas development projects in the Great Sand Hills area must also receive approval from the Departments of Saskatchewan Environment; Agriculture, Food and Rural Revitalization on Crown land; and Industry and Resources or development cannot proceed. The provincial departments, RMs and Commission have benefited from this effort and harmonized process to coordinate project development and improve standards since the original strategy's implementation in 1991.

Developments in the Great Sand Hills area must adhere to the many policies in the municipal bylaws that speak to environmentally sensitive areas. The bylaws contain specific goals and objectives to reiterate provincial environmental requirements. Some of these address incompatible developments, preservation of significant natural features, representative areas, and the minimization of property damage, economic and social disruption. There is an educational component that seems to fall on the shoulders of the RMs to ensure the companies recognize the sensitivity of the area they are proposing to develop. Sometimes the perceived delays in "the time involved" is due to assisting the learning curve – it is also to ensure all parties involved have adequate time to ensure valuable information is shared and that all issues are addressed. Adequate advance planning usually ensures no unexpected, costly situations are encountered. Because of the sensitivity of the area, the less damage created at the beginning of the project will reduce future costs for reclamation and remediation.

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[2] Depending on the nature of the project, projects may or may not require a formal environmental assessment "approval" from SE – only those projects that go through a full Environmental Impact Assessment (EIA) require a Minister Approval. Other projects get a clearance to proceed without a formal EIA and approval. While that may sound like an "approval" and is considered to be one by most parties, it contributes to a lack of provincial enforcement ability. In other words, results of an Environmental Protection Plan (EPP) review are not binding or enforceable, except to the extent that they may be included under an approval pursuant to another piece of legislation.

The existing provincial environmental review process, which has been applied most consistently to projects proposed by the gas industry, dates from the first gas exploration and development in the area in the late 1970's. SE requires and has required since the late 1970's that an Environmental Protection Plan (EPP) or Environmental Impact Assessment (EIA) be submitted for project clearance before virtually any gas project can begin in the GSH. These plans must detail the environmental features that may be affected by the project and the measures that will be undertaken to avoid or minimize these conflicts. The plans are circulated to additional provincial and federal departments and to the affected RM(s) and Planning Commission for their comments and review. EIAs are also subject to a more formal public-involvement component. This process ensures that affected agencies are fully aware of proposed activities in the area and have opportunity to ensure that the project complies with their respective regulatory procedures. As importantly, the process ensures that decision makers and the public (especially for EIA projects) are aware of the necessary tradeoffs (economic benefits vs. environmental costs) before decisions are made to approve or deny development projects and the conditions under which they may proceed.

Since the 1991 Strategy, the improving quality of the environmental studies demonstrates a concerted effort by proponents and provincial and municipal agencies to recognize, appreciate and address environmental concerns. The gas industry has learned by experience in the area and has developed and adapted techniques that reduce the invasiveness of development projects. Experience gained by provincial agencies and RMs regarding the nature of impacts, techniques and procedures that can be used to limit impacts, are also reflected in the guidance provided to the industry. In other words, increased experience working in the area has enhanced both the quality of impact avoidance and mitigation and the understanding of ecological processes in the area. There are occasions when a developer has not fully realized the time involved in meeting either environmental or municipal regulatory requirements; however, these instances are infrequent, as industry has become more familiar with the provincial and municipal processes involved.

While there is a relatively mature environmental review process that is applied to the gas industry, and while that process is both well accepted by the industry and used by the industry to give credibility to their planning efforts, the same cannot be said of projects proposed by other proponents in other sectors. The environmental planning and review process has not been widely applied as clearly to the other principal land user in the area, the ranching and grazing industry. Requiring individual lessees to undertake detailed environmental evaluations for projects such as alternative water distribution system, which raise many of the same considerations as gas development (e.g., water pipeline installation, trails, water wells, dugouts), is desirable; however, may be cost prohibitive to an individual lessee. SAFRR has aided and can assist individual lessees with GPS, mapping, routing evaluation, record retention and rare plant identification as time and resources permit. Recent progress with projects on areas operated by

SAFRR (Community Pastures) is providing experience and building capacity to do environmental planning for projects on leases held by private individuals or groups. Consideration should be given by provincial agencies to providing the necessary support (either financial or in-kind) to small land users to ensure that an equivalent level of environmental management is accorded without imposing onerous requirements that could inhibit advances in stewardship practices on their part (e.g., replacement of dugouts with modern wells and controlled-watering facilities). Such an equivalent level of management would involve both the detailed advance planning and use of equipment and techniques that are environmentally preferable but more expensive than those typically used in ranching operations in this area.

Application of environmental planning and management standards to the local municipal projects has not always received the same level of attention as gas development projects. It is important for local councils to recognize that the benefits of environmental planning apply to infrastructure projects such as gravel pits and road construction. While some of the same problems exist as with the small-agricultural sector (availability of expertise, limited financial resources), opportunities exist in bringing cross-sectoral consistency and the related environmental benefits to municipal projects as well.

Ecological Impact

Many of the environmental concerns identified in the 1991 Strategy remain today. Issues regarding ecosystem fragmentation, invasive species, loss and disturbance of rare and threatened species, erosion, ground water and soil contamination, fires, climate change, and drought have not lessened, nor are they likely to lessen over time. Disturbance to the land often affects both the ecological integrity and the long lasting aesthetics of the area. However, disturbance may be necessary to maintain the ecological diversity of the area – as with most ecosystems, instability and the associated flux of habitats and species provides for the ecological uniqueness of the area, whether or not we find it "aesthetic". New infrastructure, such as roads, can be abused by providing the unintended opportunity for increased, irresponsible access (e.g. all-terrain vehicles) and litter.

It is becoming increasingly recognized that all users affect the area, often in similar ways, and that the impacts of all users, not just a particular sector, must be considered. Similarly, all land users have responsibilities when it comes to maintaining the integrity of the area. This recognition that all activities exact an impact on the area is the basis for the conclusion that it is the cumulative impact of all activities that must be considered, not the activities of one land use or another in isolation.

While it is acknowledged that there is limited information regarding the interrelationships between impacts of individual land users and the cumulative ecological impacts and that research on these topics must continue, this does not provide an acceptable rationale for excluding relatively well-understood land uses from the area. For example, one study titled *The Ecological Impact of Human Related Disturbance in the Great Sand Hills: Exotic Plants as Indicators of Integrity*[3] found that the presence of invasive plants could not be associated directly as a result of a specific land use such as gas well development. The authors would suggest that any disturbance bears the risk of causing some kind of ecological impact, and that appropriate precautions for any activity must be undertaken.

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[3] by Ann Gerry and Mike Andersen, Fish and Wildlife Branch, Saskatchewan Environment, April 2003.

Environmental Management

Many of the concerns surrounding these issues relate to the permissive nature of provincial legislation as it applies to some of the land uses in the area. Historically, the ranching industry has implemented improvements as required to enhance grazing, resulting in landscape impacts at watering sources and corrals. Overgrazing may be one of the contributors to changes in grass species while fire control has led to increased abundance of woody species. Importation of feed and the spring introduction of cattle into pastures may have contributed to the distribution of weeds in the area. More recently, the gas industry has been subject to greater attention at the project planning stage, but has not been subject to formal penalties when problems have arisen (e.g., downy brome, local disturbance). They have, however, been subject to requirements to rectify these situations. Effective management requires both the formal ability as well as the political will to develop and implement the necessary changes to policy and legislation as they affect all users.

However, it is also important to recognize that there is good work being done in the area by all land users with respect to research, reclamation, technological improvements and environmental stewardship. Unfortunately, many of these advances are under-recognized in the public eye. Whether due to a lack of information transfer or misconceptions, there are some preconceived attitudes towards development that are not necessarily reflective of the actual practices being conducted.

It has been noted by some participants in the Strategy Review that the land is largely being utilized well and efficiently, while the area's integrity is being maintained. This issue has given rise to some discussion, as there has not been official, scientific study of the cumulative impacts of the various land uses in the area. With this in mind, it is important to consider that no one activity may necessarily be branded as "bad" at this time, but that it should be considered a land use that has its own repercussions with respect to management. For example, grazing may be considered a land use for which the consequences are generally amenable to management. As well, the improvement of various ground water sources by ranchers in the area has contributed to a change in wildlife species by enhancing habitat for species that are not naturally drought-tolerant. Reclamation procedures have improved over the years and natural seed mixtures are being used to reclaim some disturbed land. More data regarding rare and endangered species is constantly being collected to help inform some development decisions. There is harmonization between SAFRR and SE's standards and policies with respect to land use and lease requirements. SAFRR has assisted with numerous range management initiatives through extension and individual range planning for some ranches in the area. Recent water-distribution projects consisting of shallow wells and buried plastic pipelines allow for better grazing distribution.

During the consultations, many people voiced concern that the terminology that is being used needs to be more clearly defined. While many people refer to 'environmental sensitivity', it is unclear whether everyone considers the term to the same degree or level of understanding or detail. Other terms such as 'ecosystem integrity' and 'purity' are used with similar generality.

This lack of clarity may contribute in part to a publicly perceived lack of scientific input in some development decisions.

It may be necessary to consider what is the ecological "norm" for the GSH in considering what sorts of activities can be acceptable and what constitutes "change". The area is ecologically unstable, with much of its biodiversity (including many of its rare plant species) dependant on disturbance, a natural feature in an area based on Aeolian (wind deposited) sands. In this instance, disturbance is a necessity in order for certain species to thrive. The focus of many of the concerns with disturbance may be the association of excessive disturbance and intrusion of exotic species. Much of the human activity of the past century has been directed to stabilizing and controlling natural events, including fire, activity that has led to inevitable change in the area. Perhaps it is more important to manage some of the undesirable side effects of disturbance (e.g., exotic species invasion) rather than automatically assuming that disturbance *per se* is bad.

In order to begin to address the many and varied environmental concerns, the Review Committee reviewed all the information collected as a basis for the following concepts that may be included in the recommendations to be submitted to the government.

3.1.1 Environmental Needs Analysis

- Re-evaluate and define both 'representative' (special use) and 'protection' areas to ensure a common understanding among the public, developers and regulators. There is currently some confusion and misperceptions on what these areas stand for:
    - clarify and define objectives for "protection" and "protected areas"
    - define the types of characteristics and features to be "protected" and provide a rationale (representative, unique etc) and identify gaps in or short falls of the 1991 PPAs
    - confirm area designations and the activities which will be allowed within them based on application of the protection rationale
    - consider ecological impacts of "acceptable" activities, including grazing, and how these can be managed in "protected" areas.
    - consider cumulative impacts including those of "acceptable" activities in determining ecological carrying capacity and acceptable uses. Recognize that to do nothing, to allow no activity or to default to existing "acceptable" activity are in themselves decisions that will lead to predictable changes
    - formally designate the areas – identify the specific tools that will ensure the intent and preserve the integrity of the designated areas in addition to having the minerals placed under crown reserve for areas identified for protection.

- Coordinate information regarding environmental data and processes. This information should be updated and readily available to any persons who have an interest in the area (have a development proposal, are doing research, etc.)
    - Identify the appropriate forum to relay this information
    - Identify resources needed to accomplish this task and ensure that the database is kept current and managed over time

- Develop multiple land use objectives for non-protected areas. Develop guidelines for management of these areas – e.g., Develop trail management policies to allow better access for fire control and ranchers, while hunters primarily utilise existing trails.

- Clarify the provincial and municipal management roles in the area. While the province formally adopted the 1991 Strategy and incorporated the recommendations within departmental policies and guidelines, the provincial role should be updated to respond to this review's findings. Clear areas of authority and jurisdiction should be established to ensure consistency in the area. A suggestion was made that this could be exemplified by providing more intense management to crown lands.

- Recognize and develop a strategy to address shortcomings in provincial ability to enforce environmental management in the area. This may require changes to provincial legislation and/or regulations.

- Consider further measures to prevent the spread of invasive species. One hypothesis is that the problem with exotic species invading disturbed sites is not the disturbance but the availability of weeds to colonize the disturbed areas.

3.2 Ranching / Grazing

Ranching is the traditional and the predominant land use activity within the Great Sand Hills area. It offers family members the opportunity to stay on the land and foster longstanding community relationships. With this long history, of ranching, grazing as a land use has been determined to be ecologically manageable and sustainable. Many local residents appreciate a unique sense of solitude and beauty within the Sand Hills that is not experienced elsewhere. However, there is subjective interpretation as to whether other users such as the gas industry co-exist successfully within this context. Some ranchers have experienced that the impact of the gas industry is reasonably subtle on the land. Wildlife has adapted to the presence of development and hunting has not been adversely affected. Some ranchers find that they are not fairly or adequately compensated for the disturbance that the gas industry creates. The Review Committee heard that compensation couldn't be met solely or sufficiently with a dollar figure in every instance. For example, you can't put a dollar figure on aesthetic value.

3.2.1 Ranching Considerations

- Compile and assess the ways in which gas resource development has affected the ranching lifestyle and operations.
    - Some ranchers are doing so on an individual basis, leading to information that is anecdotal in nature or specific only to individual ranches. The information could be collected at a more comprehensive level to better assess if the industry is affecting ranching as a whole, or if the concerns regarding development can be narrowed down to specific, individual companies or individual ranchers.
    - Some ranchers have identified a negative impact due to gas development within their leases and they feel that they do not receive adequate compensation for the time, energy and inconvenience that they expend to ensure that the land is

protected. Some ranchers have taken it upon themselves to undertake additional monitoring of gas well sites and trails as they feel at times this impacts their ranch operation. Part of this issue will be to determine the necessity for this additional monitoring and then the appropriate role, responsibility and possible compensation or recognition for it.

  - It should not be assumed that compensation automatically equates to a monetary amount. There are impacts on the passive enjoyment of the area that cannot be traded for a dollar figure. The sight of gas wells, drilling rigs, or deepened ruts in the trails now interrupts some previously enjoyed views. Similar to maintaining distances from wildlife habitats or water sources, certain view-planes or distances from residences may deserve to be preserved from development as well.
  - It may be beneficial to educate all lessees of the provisions of the Provincial Lands Act, Regulations and Policies and individual lease clauses regarding their rights and other users rights on Provincial Crown Lands.
  - There is a need to further educate all parties of the scale of impact of gas operations on a grazing operation and the actual land displacement, which is relatively small when established. Exploration often provides more conflict situations, however progress continues to minimize this footprint on the environment and operation of the ranching activities.
  - Many of these concerns are subjective and will vary in value with individuals. Further research and some form of survey would need to be conducted in order to quantify these concerns that the entire community may be experiencing.

- Re-evaluate the gas revenue sharing for affected agricultural lessees.
  - This is a province-wide issue not exclusively a Great Sand Hills matter.
  - Some ranchers agree that compensation works well in the community pasture where the SAFRR Lands Branch Pastures Program receives all monies generated and applies them to capital improvements, which improve the overall pasture with positive improvements such as water distribution for the benefit of all those who participate within the program.
  - This model of sharing works in the Pastures Program as they are a separate entity under a stand-alone revolving fund whereas Lands Branch revenues go directly to provincial general revenue.
  - Lessees are given a specific dollar amount per well. Some indicate that the amount is insufficient and the concern has been brought forward to the Saskatchewan Association of Rural Municipalities.
  - Some ranchers have proposed that they would like to receive extra monies individually such that they would be enabled to fix trails themselves and not have to rely on another body or structure to monitor this situation. It should be noted that this is the responsibility of the gas leaseholder not agricultural lessee as this land has been removed from the agricultural lease. This suggestion may need further discussion under the issue of trail management in general.
  - Need to recognize that compensation to surface occupants must bear a realistic relationship to monies paid by occupants to lease the land for grazing.

- Expand and continue extension initiatives related to range management

- Range management workshops through SAFRR serve as a forum to get together and share new information, different practices, latest technologies or experiences from real-life examples.
- SAFRR should consider an emphasis on an expanded program in range management
- There needs to be better promotion or increased awareness of workshops and more information available

3.3 Zoning/Land Use Administration

Currently, the four Rural Municipalities of Piapot, Pittville, Clinworth and Fox Valley utilize the same land use regulations, the *Great Sand Hills Planning District Development Plan* and *Zoning Bylaw*. When a municipality receives a proposed development application, the local council initially reviews it. If the proposal is located in the environmentally sensitive areas, it may or may not require rezoning. Developments within the environmentally sensitive zones that require rezoning are referred to the Commission for additional advice and recommendations[4]. It is important to note that the Commission is an advisory body to the affiliated municipalities that also receive further advice and input from provincial agencies. The final decision to amend the bylaw rests with the affected municipality. Although the R.M. of Piapot withdrew from the Planning District Commission in 2001, the municipality adopted and still administers the same bylaws and procedures, aside from the referral to the Commission.

It must be appreciated that the local councils have dedicated significant time and effort towards the improvement of their land use administration and representation of the local interests. Because the Great Sand Hills are also an area of both provincial and national interest, the Great Sand Hills Planning District Development Plan and Bylaw has provided a good communication tool that assists the local municipalities to make consistent development decisions. However, because municipalities have the legal authority to make changes to their bylaws, there is concern that changes in council may and can change policy directions, which, in turn, may lead to inconsistency. It is this concern that the advisory role of the Commission has played a significant part to help alleviate. Concerns have been expressed that the administrative organizations are not adequately funded or resourced in terms of staff or finances in order to manage the area fully, which may result in unnecessary procedural delays.

Under *The Planning and Development Act, 1983* (the Act), a municipality that has adopted land use bylaws can: require development permits; apply specific development standards; require performance bonds; issue stop work orders; and establish a penalty/fines system. It has been found that many municipalities do not fully utilize all of the tools available to them under the Act and that the complexity of the topics and the area lend themselves to an education of processes or a succession plan for new members on the Commission and local Council. There is provincial assistance available to municipalities for access to staff expertise as the province, RMs and Commission often work together.

The present zoning is flexible and allows for submission of development opportunities in all areas except those identified as Prime Protection Areas in the 1991 Strategy. While this allows for balance, it also leaves the municipality open both to outside pressures for re-zoning applications that may not be desirable at this time and against development proposals that can be accommodated within existing protection and management standards. The land use designations generally help minimize impacts to surface by requiring creative redesigning of projects or operations. This motivates innovative responses to meet the environmental requirements (e.g. pigging, piping of water). Mineral rights are not posted unless the RM determines that re-zoning can be accommodated because the developer has shown that stringent environmental requirements can be met.

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[4] The developer may choose to submit the proposal for concurrent review by the applicable provincial departments.

It is an investment to develop in such a sensitive area and the gas industry may suggest that zoning has been used to stymie development, given that limited development has occurred in the period since adoption of either the current or the predecessor bylaws. It must be remembered that zoning is a tool to assist municipalities with land management and that the inherent public processes provide opportunity for the local residents, who are the most familiar with the area, to participate in the decision-making process.

It has been generally agreed by participants in the Strategy's review that further refinement of the land use zoning is required. Without greater scientific data, there have been concerns that subjective, rather than objective, decisions have been made with respect to some development proposals. Where areas are to be re-examined, the province should appreciate the loss of finances to municipalities by creating protected lands where development is restricted. There are economic repercussions and a loss of potential assessment revenue by municipalities to protect the areas. Councils sometimes struggle when making decisions for rezoning which have economic implications. The final decision whether to re-zone lands rests with the municipality and cannot be appealed to any other official body. Although the Act does provide the ability to the Minister responsible for *The Planning and Development Act (1983)* to direct the municipality to make changes to its land use bylaws, the policy has been to respect the local autonomy that has been granted by the Act to the municipalities.

3.3.1 Municipal Considerations

- Develop and/or use provincial legislative tools in addition to municipal zoning that will designate the larger protected lands:
  - Provincial policies need to address management issues and significant interests that extend beyond the scope of municipal boundaries and are of a more regional nature.
  - The scope of the prime protected areas identified in 1991 needs to be clearly defined – there is some definition in the bylaws. Some of these areas required that the disposed mineral rights be bought back by province. However, further consideration should also be given to clarifying the acceptability of other types of development (e.g. wilderness recreation) or land uses within these locations.
  - Additional clarification is required regarding what practices are acceptable for approved land uses in protected lands (e.g., carrying capacities, water facility construction) to ensure that the "protected" status addresses impacts from all land users.

- Clarify municipal zoning:
    - The size and boundaries of the various zone classifications must be re-evaluated with the current advances in technology and science that can better assist in determining these zones.
    - It may be possible to implement a methodology similar to what was used in Cypress Hills to evaluate areas prior to any further sale of minerals. In that case lands with a topographical slope greater than 6% (the maximum angle that is feasibly practical to prop up a drilling rig without cut and fill) were eliminated from gas development consideration. Lands were assessed through ground-truthing by representatives from the RM, provincial government and landowner. Blocks, down to the LSD, were identified for restricted surface access in advance of mineral rights sales. Some of these lands were already within a special designation; however, it was also determined that designation was not always necessary due to the obvious physical limitations.
    - Clarify and assign roles to the municipality and the province based on what is considered "land use" in the normal municipal sense and where expertise lies (in many technical fields, with the provincial agencies). In other words, seek to ensure that jurisdiction is complementary, not overlapping and conflicting.
    - There appears to be a widespread public misconception that ES1 lands are protected lands in which no gas development can occur. In addition, it is important to recognize that all land uses have impacts which must be considered in the concept of "protection"
        - Explanation regarding the purpose and intent of the Great Sand Hills Planning District land use bylaws could be added to a public information website specific to the area. (General information on municipal zoning can already be found on GRAA's website).
        - Further clarification could be added to informational/tourism literature about the area.
        - More information on the municipal bylaws may clarify that the zoning classifications did not establish a moratorium on gas resource development anywhere in the area.
    - Develop informational materials for both new council members and developers new to the area

- Re-evaluate and provide additional resources to support local administration:
    - Establish who should be responsible to conduct ground truthing
    - Determine how and who could provide more expertise to be available to decision-makers
    - Develop a fee structure to cover the municipal costs to manage activity monitoring

- Implement an effective means to address the gaps in environmental development follow-up. For example, assessment is necessary to evaluate:
    - 5 year reclamation status on exotic species, cumulative impacts, etc.

- Although 5 year reclamation status monitoring and reclamation bonding is required by the province on EIA areas now, RM environmental monitor could assist in implementation of monitoring
- Ongoing monitoring of various activities and land users could be conducted at the municipal level with information added to a regional databank

3.4 Industry – resource extraction

As has been previously discussed, all gas development proposals must undergo thorough review and receive approvals and clearances from the local municipality and the advice of the Commission (on environmentally sensitive lands) as well as Saskatchewan Environment; Agriculture, Food and Rural Revitalization on Crown land; and Industry and Resources. The departments and local administration have worked together to coordinate these processes in order to facilitate decisions on development proposals in a timely manner. As noted earlier, efforts need to be made to assist ranchers and other small-scale land users meet the requirements of environmental management and maintain a semblance of equality amongst various land users in terms of approval procedures and environmental protection and management standards and practices.

Although there have been great strides to develop thorough protective environmental measures, these processes can only be as successful as they are properly monitored and enforced and applied by all users. Further, decommissioning plans and procedures are also significant to address the reclamation of aging fields (well heads and trails) once development is completed or where agricultural facilities are no longer required (e.g., abandoned dugouts and windmills). As previously noted, provincial agencies lack effective enforcement tools to deal with situations where land users undertake development activity in a manner that causes unnecessary or unacceptable levels of environmental damage.

A great deal of the success of environmental considerations relies on the cooperation and responsibility of the developer. For example, environmental protection plans cannot work if the developer or his contractors fails to implement them. Although developers are expected to take their responsibilities seriously, there is the odd occasion in which some companies do not do so[5]. Provincial agencies recognize that the enforcement possibilities and the consequences for a developer who breaches commitments are unclear or insubstantial. At present, the municipality has the most effective authority and tools available in these regards, although they are not currently utilised to their full potential.

It is understood that when a project is complete or individual wells are to be abandoned, any disturbance is to be reclaimed according to provincial reclamation standards. This is addressed in Environmental Protection Plans (EPPs) and Environmental Impact Assessments (EIAs). EIAs have formal follow-up reporting requirements and reclamation bonds (funds) are in place at the provincial level in the event the developer does not meet his obligations. The principal concerns seem to be with trails. In general, trails will be reclaimed, except where they existed prior to the project and/or where the rancher wants them left in place. It is expected that well sites will have been re-vegetated (to the limited extent that re-vegetation is required) during the operation of the well. Likewise, low-grade trails in particular are expected to re-vegetate on their own once they are no longer used. Problems are more likely on trails that have been altered, particularly older ones and those that have received a high level of use. There is not a high level of comfort that reclamation will be trouble free; comfort levels may increase as more site reclamation is undertaken in the Great Sand Hills area.

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[5] The same expectations need to apply to other land users, including ranchers, hunters and the municipal sector itself.

SIR (through its well site abandonment and remediation requirements) and SAFRR (through its lease reclamation and restoration requirements) have the necessary expertise and experience to ensure that these sites are properly abandoned and reclaimed. SE has reclamation standards and (on EIA lands) bonds in hand to ensure funding should the developer fail to live up to responsibilities.

While standards, expectations and in some cases, up-front funding, are formally in place in relation to the gas industry, no such policies or capabilities are in place with respect to other land users, particularly the ranching industry. Given that both sectors raise many of the same concerns, this discrepancy needs to be addressed if long-term ecological integrity issues in the sand hills are to be addressed.

Whether the experience has been positive or negative for the local people in the area, the gas industry has provided significant economic benefit to both the local municipalities and to the province. For example, it is estimated that 60% of the families in one RM derive their main source of income from gas industry development in the area. The industry is not only supplementing, but increasing the opportunities for people to continue to live and work in this area while the agricultural sector continues to face difficulties with international trade and natural climatic challenges. Alternatively, this same municipality has experienced a 41% increase in their budget for road maintenance due to the increased traffic both in their municipality and enroute to development sites in nearby municipalities. As the Review Committee considers appropriate land uses and management practices for the Great Sand Hills, it is important to appreciate that compromises may have to occur to achieve the best balance to sustain both people and the environment over the long term.

It is critical for operations, whether gas or otherwise, to have *minimal surface impact* – roads must be minimized, drilling should be multi-well pads or use other minimal surface disturbance technology. Reclamation, by all users, must be done with native species and practices to prevent the introduction of non-native species must be followed. Regular monitoring is required and where problems are found rigorous control must be initiated. Achieving these objectives equitably for all users poses a major challenge for the future management of the area.

3.4.1 Operational Concepts for Consideration

- Supply resources to the Commission for expenditures.
    - Support staff, environmental monitor, special meetings for reviews (done in part already by companies), fees collected from other municipalities not in the

Planning District, but may be adjacent – in order to further enhance those practices that are already seeing some success.

- Remind industry periodically to follow the required operating practices that they agree to before development begins.
    - A clear understanding must be acknowledged regarding the roles and responsibilities of development in the area. Industry must take ownership for their actions. The province and the municipalities must also clearly define and understand their respective roles and responsibilities to avoid continuing uncertainty of past years.

- Incorporate clear penalty clauses and enforcement procedures,
    - By the municipalities and the provincial regulations.
        - SIR can withhold mineral leases, revoke well privileges, but do not or cannot affect surface access issues
        - SAFRR authorizes surface access and companies are responsible for payment until sites are satisfactorily reclaimed
        - Require changes to provincial legislation to enhance environmental management and protection authority
    - Clarify the municipal authority in this regard.
        - Requirement of performance bonds or approved letters of credit to the RM prior to development. Under the *Planning and Development Act, 1983*, municipalities have the authority to require this already, but have not done so. While it may be easy or obvious to apply such conditions to gas development, consideration should be given to other activities or developments as defined by the bylaws as well.
    - Establish stronger provincial enforcement regulations and coordination between departments and RMs
        - E.g. protocol for reporting problems
    - Follow through with enforcement procedures so that all developers or potential developers realize that they will be held accountable for indiscretions or breaches in agreements. Not enforcing may be interpreted as condoning those actions and must be applied to all sectors.

- Review and revise the provincial regulations and policies to ensure/reaffirm common standards apply provincially
    - Develop and implement the requirements to sufficiently address the decommissioning of development projects by the appropriate departments.

- Establish special licensing of companies that have proven/demonstrated responsibility to work in area.
    - This may be considered as a reward or acknowledgment/appreciation system to promote good practices or share technological advances. Such acknowledgement may promote more information to the general public about actual practices and reduce misperceptions regarding activities.

    - Consideration needs to given to the feasibility. This may not necessarily be a legal form of licensing, but a form of certificate of recognition issued by the municipality.
- Employ an environmental monitor that will be responsible to the local municipality or commission and not the developer. (Environmental monitor is defined in glossary)
    - Re-confirm the existing municipal tools to accomplish this (e.g. the development standards and conditions that can be applied with the development permit process).

These points focus on the gas industry, although many of the issues raised are common to other users, users that typically have much lower ability to fund the necessary measures.

3.5 Access to Resources

Several concerns have been raised since the 1991 Strategy with respect to the physical access of areas within the Great Sand Hills for a variety of uses, but particularly for resource development.

People have recognized that there are several economic opportunities in relation to resource development through employment, leases, taxation, and royalties. Those who hold mineral rights should have access to those areas in which the development can meet the environmental criteria. Minerals have been posted with restrictions and warnings regarding environmental sensitivities. New mineral sales within the most environmentally sensitive lands have been restricted since 1998 and are coordinated with RM's. Depending on their viewpoint, people believe the inability to access minerals to be a consequence of municipal zoning, provincial regulation, topography, technological limitations or a combination thereof.

There are perceived delays of projects for the gas industry to get approvals so that they can proceed with their development projects. There is some concern that municipal authority excessively interferes with development because there are provincial regulations in place. This is especially of concern when local authority may be inconsistent with provincial actions. Others believe that the local administration provides more opportunity to ensure that development proceeds in a responsible manner. However, recently there have been indications of better harmonization among provincial departments, the municipalities and the Commission in order to try to balance issues between resource development and environmental management to facilitate multi-use activities. To take this further, formal clarification of roles and responsibilities, assigned resources, etc. is necessary or the past history of frustration or perceptions of delayed development may continue. For example, the rules should be defined, including who does what, in order to streamline the processes and reduce any redundancies while meeting legal requirements.

The concerns regarding the physical condition and use of trails were established in the 1991 Strategy and have not changed. The Strategy recognized the majority of the area as multi-use including gas development. Oil development was not intended. It has been discussed that an access management plan inclusive of better monitoring needs to be developed and implemented. Company confidentiality of techniques for managing environmentally sensitive areas has restricted the possible options for resolving the environmental and trail management concerns. The Commission has suggested on numerous occasions that an effective trail management plan that reduces the number of trails, rutting, trail reclamation, minimizing trail blowouts, and other concerns be addressed. It is important to recognize that such a plan would apply to all users, including ranchers, hunters and RM road policies. Some trails, which are not intended for public use, are desirable to trespassing and recreational vehicles that do further damage to the trails above and beyond ranching and gas industry use. There are concerns that ecotourism may actually be more harmful by making the area overly accessible to more recreational activities that may cause as much disturbance as other defined developments. All of these concerns should be addressed in further detail.

It has further been identified that concerns regarding access also extend to the basic use of municipal roads. With the increase in traffic from the gas industry, previously undeveloped legal road allowances have been opened. Traffic from the gas industry not only affects the municipality in which the development is located, but also the adjacent municipalities through which the traffic also must travel to reach other well sites. This places a significant stress on the maintenance and longevity of municipal roads. Under the current legislation, it is possible for municipalities to enter into road maintenance agreements with the gas companies affecting their municipal roads. However, there appear to be inequities with consideration to the effects on neighbouring municipalities.

3.5.1 Accessibility Concepts for Consideration

- Re-confirm the existing processes that the commission and municipalities have to assess access to area (i.e. ground-truthing) in cooperation with provincial agencies.

- Develop a comprehensive plan to provide direction to areas that are accessible to the public and appropriate signage to identify private property.

- Develop an access management plan
    - Included in the management plan, establish better monitoring to ensure greater responsibility of trail users
    - Conduct further evaluation to determine the extent of the use – industry establishes the amount of trail use that will be needed for each project and ongoing maintenance, how much more are the trails being used by others that may be exacerbating the trail conditions?
    - Consider the cumulative use of the municipal road infrastructure by the gas industry
        - Evaluate the costs to municipalities that have development in them
    - Define reclamation standards more clearly as well as responsibility for effecting reclamation

- Allow companies to purchase additional mineral rights that may not be currently accessible but fits their operational outlook (e.g. if they already have adjacent facilities and subject to ground-truthing). A Cypress Hills-type approach could be used to determine accessibility in principle before any new minerals are sold. Such sale would

not be a guarantee of access – simply an indication that regulators would consider development plans in these areas
    - This is allowed now if a company receives clearance from the municipality and province
    - Municipalities may receive greater pressures to re-zone; may build more pressure on the municipality to re-zone for access

- Update and implement a tourism study that has been completed.
    - Establish the structure to implement the tourism aspect.
    - E.g. expand the role of the commission, provide resources to support,
    - Or, the municipality in which the tourism areas are suggested could receive more support to implement
    - Tourism could assist in relaying further information and may minimize misconceptions about the area, the people living and working there, the activities that go on, and the actual physical makeup of the land.
    - Include an interpretative component

- Enhance hunter access to the GSH.
    - Review game seasons for the GSH with the intent of increasing recreational hunting opportunities.

3.6 Public Workshop Summaries

The above discourse provided a basis for the Review Committee to distil 6 scenarios that were brought forward for further public consultation as the beginnings of possible recommendations. At the public workshops held May 27, June 2 and 5, 2003, members of the public that elaborated further or more specifically on those ideas that the Review Committee initially brought forward proposed additional scenarios. Those concepts have been incorporated into the following summary. For a fully compiled set of notes from the workshops, please see Appendix F.

3.6.1 Status Quo

This scenario is based on current operations and the 1997-98 Great Sand Hills Planning District bylaws. In this option, land use would continue to follow the existing municipal bylaws and provincial regulations. However, as the above issues note in addition to the purpose of this review, although some aspects of the existing procedures are working well, there are clearly areas that require further clarification, refinement and resolution in order to address the competing interests of development and environmental preservation.

3.6.2 Status Quo plus Adjustments

This scenario would allow a clear definition of ES1 and ES2 zoned lands. It has been suggested that all ES1 and ES2 lands should be classified together as generally "Environmentally Sensitive" and addressed in an appropriately developed manner. Further to this scenario, a mechanism would be developed to ensure there is no access to off-limit areas and the parameters of those off-limit areas would be clearly established. Local and provincial administrative changes that would include such topics as performance bonds, environmental monitors who report to the commission or RM and funding to hire administrative services would need to be considered as well. The intention of this scenario endeavoured to further enhance those areas that people have agreed are successful, while working on those areas that have been identified as unclear. The discussion largely continued the issues above.

3.6.3 Expansion of Prime Protection Areas (identified in the 1991 Strategy)

As indicated in the original 1991 Strategy, "the most immediate effect of designation of areas as Prime Protection would be to prevent gas development in these areas" (p. 16). There are currently 36.5 sections under crown reserve (withdrawn from Crown mineral lands) in the review area. In a crown reserve, the mineral rights are held by the province, are not posted for sale and cannot be considered for development. In expanding the "Prime Protection" areas, issues such as: ground cover, accessibility, topography based specifically on physical accessibility, representative land formation, and inoperable lands need to be considered. While it was generally agreed by the workshop participants that some kind of expansion to protected lands should occur, a great deal of discussion was generated regarding what specifically "protection" means and the acceptable land uses that may occur within such areas. As well, it was suggested that any undeveloped areas should be examined for inclusion in this type of an area. Any recommendation to expand some kind of protected lands needs to consider issues such as defining what is to be protected and the philosophy behind choosing the criteria that are to be used in those definitions.

Some workshop participants suggested that the specially designated areas should be placed under a form of protection in perpetuity and the minerals placed under a crown reserve. Others further elaborated that this could best be accomplished by way of a special Great Sand Hills or Native Grasslands Act. Similar in concept to the Wascana Park Authority in Regina or the Meewasin Valley Authority in Saskatoon, the area could be defined as having its own legislation that would specifically address the unique circumstances in a comprehensive way.

To change only the Prime Protection Areas (identified in 1991 Strategy) and nothing else was generally considered undesirable by the participants as it addressed too few areas of concern in isolation and then created other concerns with respect to finances, scientific input and discrimination against the gas industry. One group discussed combining Option 2 with Option 3 as an overall recommendation.

There are numerous mineral leases in environmentally sensitive areas which received ministerial approval from the Minister of Environment before the 1991 Strategy and ensuing 1994 ES zoning and the 1998 municipal ES1 and ES2 land use designations came into being. For these leases, it is still required that the company meets site-specific environmental conditions before they may be developed. One gas company proposed that the existing processes remain in effect, but that they are given a limited time opportunity to develop those leases in the ES1 lands. If the company could meet the environmental conditions in that limited time, then they should be allowed to develop that site. If it were found that the site is not developable for environmental reasons, then the company would return the mineral lease to the province without compensation. The qualifier would be the time allotted to prove that the site is developable would be limited, and the onus would be on the gas companies to meet the deadlines.

3.6.4 Enhanced or changed role for formalized structures

Currently, the Rural Municipalities and Planning District Commission administer the local land use processes. The intention of this scenario would be to build new relationships between the province and municipalities for land use management in the area. It may be possible to create a formalized board or body to determine specific issues in order to minimize process duplication, but which would not preclude local decision-making consultation. The fundamental question was who should have the decision-making authority? The parameters, goals and objectives would need to be defined. For example, is the aim of such a structure along the lines of the Manitou Land Use Strategy, which is composed of members of all affected groups in the area, but the province is the final decision-making authority; the Qu'Appelle Planning District, which had a corporate board made up of provincial and municipal interests and its own authority; or the existing GSH Planning District Commission, which is an advisory body to member municipalities who retain the final decision-making authority.

Without clear details on what this formalized structure would look like, many of the workshop participants and Committee itself were cautious in this discussion. There was agreement that there should be better coordination and communication of the various administrative and regulatory processes that occur in the area and that there may be potential to create an effective body. However, it may be due to the open-endedness of the idea that left some participants concerned over such possibilities as reduced opportunities for public participation or municipal involvement and the fear that a more ineffective bureaucratic process could unintentionally be created instead.

3.6.5 Multi-use scenario

This scenario follows the intent of the 1991 Strategy. The original 1991 Strategy identified most of the study area for multi use purposes that meant it was available for gas development. Prime Protection Areas remain restricted from gas development. Lands would be available for development subject to strict environmental management criteria. In this scenario, it was proposed that the zoning bylaws be changed to those similar to the R.M. of Maple Creek No. 111. In Maple Creek, some areas have been identified as to be completely inaccessible to gas development due to the terrain and some areas have then been placed under a crown reserve by the province, following an approach agreed upon by the principal stakeholders. Development plans in areas outside the Crown reserve area are subject to environmental review considering a range of criteria, including accessibility.

There was discussion that this scenario simplified some concerns but really only addressed gas development. It did not sufficiently address many of the other environmental or administrative concerns and would serve to reduce the affected municipality's input. It was expressed that there was not enough public faith in the provincial regulatory processes to withstand the responsibility of environmental management with respect to gas development.

3.6.6 Start over (true socio economic and biophysical study)

This scenario suggests the opposite extreme – that nothing is working from an administrative or regulatory perspective and that all existing processes should be eliminated. In this option, detailed research and analysis of all factors would have to be undertaken. It was determined that this option would not address the current concerns which have instigated this review in an acceptable, timely manner and created another concern over what would be allowed to occur while such study was underway. Although it would be possible to learn from previous experience, the logistics were overwhelming as the financial, timing, and labour implications were not considered to be a practical option at this time.

4.0 RECOMMENDATIONS AND PRINCIPLES FOR IMPLEMENTATION

4.1 Recommendations

The Review Committee has heard, in their consultation with the public, from individuals, companies, and organizations and has considered all of their concerns in developing a set of recommendations for consideration by the provincial government. There are specific recommendations that will address identified concerns or short falls in past management, and there are general recommendations that will address concerns related to process. Many of the recommendations being brought forward by the Review Committee are rooted in the history of, while striving to make the most of the future opportunities for, the Great Sand Hills area.

The Review Committee recognizes that to ensure the ecological integrity and uniqueness of the Great Sand Hills remain there must be additional information collected and incorporated into management decisions. At the same time, it was appreciated that the economic benefits to both the local and provincial economies cannot be ignored. The Review Committee has identified the following nine areas of interest and has proposed a number of recommendations for each. By implementing the recommendations Saskatchewan will recognize the ecological importance of the area and will address the major issues facing the Great Sand Hills.

4.1.1 Protected Lands (PLs)[6] – increase size and protection

It is important to note that all participants in the review of the Great Sand Hills Land Use Strategy recognized that the 1991 Prime Protection Areas achieved a Strategy objective of ensuring the most unique areas of the Great Sand Hills were identified and set aside from development pressures. The participants also recognized that additional lands and areas require similar consideration and protection. Increasing the size of the 1991 identified PPAs is achieved through setting aside additional lands from development. The Review Committee has considered the questions of how much and where. To achieve a greater level of ecological integrity, the Committee concluded that the following actions are appropriate:

1. Add additional lands to the 1991 PPA's.
    a. The Committee recommends lands roughly three times the current PPA area (which is 36.5 sections of Crown land) be identified for protected lands designation.
2. Establish the additional lands, wherever possible, adjacent to and in combination with those PPAs identified in the 1991 Strategy. There were four areas identified as PPAs in 1991: Yakowan 12 sections; Rastad 21 sections; Wachiwan 1/2 section and Straw Road 3 sections. Additional lands should be added to each one of these existing PPAs to increase their size.
3. Include ecological representivity in the process of identifying protected lands.
4. Designate surface and subsurface control with provincial-level legislation.
5. Use the new identified lands and 1991 PPA's in combination as one of the benchmarks for ecological monitoring.
6. Confirm that the following list of land uses may be permitted within protected lands:

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[6] **"protected land"** means land or area that is or has been identified for high levels of management restriction. The Review Committee recommends that these lands or areas should receive designation under provincial legislation to restrict industrial development both on the surface and the subsurface.

a. Domestic grazing
b. Hunting
c. Trapping
d. Low impact camping
e. Horseback riding
f. Scientific study
g. Use of existing roads and trails
h. Low impact alternative watering sources other than dugouts

4.1.2 Zoning Outside of the Additional and Existing Protected Lands

For those areas outside the additional and existing protected lands, there are a significant number of environmental assessments and procedures currently used in order to minimize impact on the ecological integrity of the Great Sand Hills. Most importantly, it is recognized that the local municipal authorities have established a high standard of environmental planning greater than most zoning bylaws throughout Saskatchewan. Appendix G outlines the development approval processes administered by provincial and municipal governments. It is important to acknowledge that the municipal zoning and the provincial environmental requirements together complement and support the ecology of the Great Sand Hills. Given this recognition, it is important that the local municipal/administrative procedures be improved to ensure efficient and effective review and analysis of development projects outside the additional and existing protected lands. To accomplish this, municipal administration and land use bylaws in the area should ensure that:

1. areas outside the additional and existing protected lands are clearly identified and defined.
2. the area is considered environmentally sensitive and environmental protection planning will not be lessened. Processes established by the Great Sand Hills Planning District Development Plan and Zoning Bylaw will be supported. In the absence of scientific understanding, the utilization of ES1 and ES2 zoning should be continued;
3. the practice of coordinating environmental standards with provincial agencies is continued;
4. specific development standards should strive to achieve the most up to date environmentally responsible technologies;
5. the RMs and Great Sand Hills Planning District Commission should be supported with resources (expertise and funding) to improve their abilities to provide good management under an agreed plan of action;
6. every person before commencing any development within the municipality shall complete an application for a Development Permit; and
7. SIR consult with the RM prior to posting the environmentally sensitive subject land in the "Public Notice Sale of Saskatchewan Crown Petroleum and Natural Gas Disposition" notice.

4.1.3 Environmental Assessment

The stringent environmental planning requirements for development outside protected lands by municipal zoning, environmental assessments and land lease responsibilities all provide a significant level of protection. However, many of the projects being considered are managed individually by site-specific standards. The Committee recommends strongly that consideration be given to:

1. conducting an environmental impact assessment, which sets the basis for a comprehensive implementation plan, for long-term management for the Great Sand Hills.
2. including within the environmental impact assessment, among other things, consideration of baseline biophysical information, cumulative impacts, linear developments, ecological disruption tolerances, reclamation potentials and socio-economic impacts.
3. involving land users and those with an interest in the environmental impact assessment process
4. ensure that existing and new spatial information on roads, trails, dugouts, well pads, and pipelines is collected and centrally deposited and stored for access by the appropriate regulatory agencies and proponents of development.
5. contribute to the updating of management policies and more refined map delineation in the Great Sand Hills Planning District Development Plan and Zoning Bylaw.

4.1.4 Ecological Monitoring

The public expressed the importance of assessing how existing land uses affect the ecology of the area. Without adequate science and analysis of existing impacts on the ecosystem, the current management practices may not fully take into consideration the opportunities for sustaining the ecosystem. Accordingly, it is important to ensure that those with responsibility for the ongoing monitoring of the Great Sand Hills undertake to:

1. Establish a comprehensive program that monitors ecological integrity by establishing appropriate indicators and benchmark areas for future comparisons.
2. Undertake an invasive plant study every five years.
3. Employ qualified Environmental Monitors who report to land owner/manager to oversee developments (enforce provincial and municipal environmental protection plan obligations).
4. Support (either financial or in-kind) small land users to ensure that an equivalent level of management is accorded without imposing onerous requirements that could inhibit advances in stewardship practices on their part (e.g., replacement of dugouts with modern wells and controlled-watering facilities)

4.1.5 Grazing – minimize 'footprint'

The Review Committee recognizes that stewardship of the land can significantly impact the capability and viability of an ecosystem. Over the last 100 years, ranchers have contributed to sustaining the natural ecosystem. There are a number of factors that may assist the landowners and lessees in managing their land interests to support and enhance the current management practices of the Great Sand Hills. Recommended are:

1. Encourage the continued development and implementation of techniques that minimize surface disturbance from grazing.
2. Encourage the completion and implementation of range management plans on a ranch basis, as resources are available.
3. Jointly develop and implement a strategy with industry partners and other agencies to control and/or eradicate invasive, non-native plants.

4. SAFRR to review the compensation payment to ranchers for gas developments on leased lands (perhaps increased sharing of revenue directed at stewardship initiatives which benefit this sensitive area.)

4.1.6 Gas Developments – minimize 'footprint'

Through the public consultation process, the public expressed concerns for preservation of the ecological integrity and specific management for the area. It was also expressed that limited or restricted gas development for some areas of the Great Sand Hills may be considered possible under certain circumstances. There are established development procedures for preserving the ecological integrity of the Great Sand Hills area. These are identified in and a project must be consistent with the Great Sand Hills Land Use Strategy, 1991, and the Great Sand Hills Planning District Development Plan and Zoning Bylaw. By clarifying roles and streamlining the development review processes there is the added potential to accelerate the implementation of provincially approved gas projects that meet the environmental criteria. To assist in reducing the impact of gas development within the Sand Hills, along with current legal regulations and procedures, the additional practices identified here are important to the integrity of the area:

1. Develop and implement a comprehensive access management plan that minimizes surface disturbance. This could mean proponents would share infrastructure.
2. Encourage the use of special drilling techniques such as multi-pad and/or directional drilling as appropriate to avoid unnecessary environmental damage.
3. Streamline processes by reducing redundancy and creating clarity for reporting in reclamation and enforcement procedures.
4. Encourage reclamation projects that would begin to build an information base for successful long-term reclamation.
5. Require gas industry to complete timely environmental planning and where lands are deemed inoperable the surface then could be identified for no surface access or designated as protected lands.

4.1.7 Conserve Wildlife and Biodiversity

It is recognized that any use may have some impact on the wildlife and biodiversity. Understanding the natural changes, such as climate change, of the ecosystem along with those changes that may happen as a result of the landowners, lessees, day users and the environmental land management for the area is important. In order to monitor and manage the area over time environmental management agencies should:

1. Conduct surveys for rare and endangered species.
2. Establish reclamation standards that include the use of appropriate native plants.
3. Assess the need to increase or decrease hunting opportunities.
4. Ensure that steps are taken to manage the risk of wildfires.

4.1.8 Conserve Air and Water Resources

Water is one of the most important resources for all activities that occur within the Great Sand Hills. Pressures that impact the quality and quantity of water for users in the area require both short and long term consideration. In order to consider the current and potential impacts on water in the area based on science rather than perception requires additional analysis to:

1. Understand the groundwater resources contained within the Great Sand Hills.
2. Develop and implement a water management strategy.

3. Understand the impacts of all forms of airborne pollution.

4.1.9 Administrative Procedures

The Review Committee recognizes that the method of implementation of these recommendations must be considered if there is to be any achievable outcomes. In order to effectively preserve the ecological integrity of the Great Sand Hills while managing the various land use interests, it is necessary for the provincial agencies and municipal councils to consider their legal authority and to:

1. Identify lead and support agencies for each recommendation brought forward.
2. Establish an advisory or formalized administrative board that reflects land user interest and, in the majority, local elected administration.
3. Establish timelines for follow up to ensure recommendations brought forward are completed.
4. Establish a communications strategy to ensure area residents and others are kept informed.
5. Make adequate resources available to carry out these recommendations.

For a full range of the recommendations discussed, see Appendix H.

4.2 Looking Towards the Future (Suggestions to include in an Implementation Strategy)

The Review Committee sees the Great Sand Hills as a unique landscape that should be maintained in healthy state while allowing for a balance of economic development and preservation of the environment.

The Review Committee is not recommending any single option for implementation in this report as it is the Review Committee's opinion that a combination of options can better serve to manage the ecological sensitivities and complexities of the Great Sand Hills. See Appendix H for a listing and analysis of the implementation options that have been discussed during the review.

For any of the recommendations to be successfully implemented, an implementation plan must consider likely effectiveness over time – it must address immediate concerns, have the ability to adapt to change, yet at the same time, establish guidance for the future.

Further, the Review Committee believes that any decision by government for implementation of their recommendations must address these important principles: longevity; permanence; informed management decisions; local management; public involvement; compliance and enforcement; and dedicated resources.

In the end, the implementation tools chosen by government should strive to achieve a reasonable balance between the protection and the careful development of the Great Sand Hills.

4.2.1 Principle of Longevity

Longevity, or prolonged existence in this case, is the time between land use and resource management policy reviews and changes. The Review Committee has invested a significant amount of time and resources in this review. In order to stand the test of time, in addition to the specific recommendations above, the provincial government's implementation decision must include a clear understanding of the roles and responsibilities of administrators and landowners; of proponents and lessees and of staff personnel and elected officials.

Underlying the understanding of roles and responsibilities must be crystal clear definitions and descriptions for the implementation language that will be used. The Review Committee was reminded often that the conflicting uses of words ('protection', 'ecologically sensitive', 'development' as examples) have also led to misunderstanding of land use and resource management in the Great Sand Hills.

A monitoring and review process should be a significant and articulated component of the government decision. Timelines and methodology should be identified. The next review should be contemplated now for some planned time in the future; consider 10 years.

The 1991 Strategy and the subsequent development planning and controls introduced during the 1990s are a strong base to build on.

4.2.2. Principle of Permanence

Permanence, or the ability to withstand change, particularly policy changes, is important to address. The RMs and the Great Sand Hills Planning District Commission have managed the area under one development plan and one bylaw since 1994. There has been tremendous learning by the municipal and provincial administrations and proponents, primarily gas developers and ranchers, about environmentally acceptable developments in the Great Sand Hills area.

The Review Committee recognizes that the provincial designation of lands can effectively remove those lands from development possibility. The provincial designation may also be more difficult to remove or relax compared, for example, to amendment of an RM bylaw.

To provide more permanence the Review Committee suggests that the provincial government use current and/or future Acts and Regulations to designate and administer Protected Lands in the review area. Currently, withdrawal of Crown mineral lands under *The Crown Minerals Act* ensures gas activities are prohibited in 36.5 sections of the review area by removing rights to the subsurface. The surface has no equal provincial provisions but the Review Committee suggests it should have.

The province has a number of Acts and Regulations that may be used to address the Review Committee's suggestion. Government could consider *The Ecological Reserves Act and Regulations* or *The Planning and Development Act.*

4.2.3 Principle of Informed Management Decisions

The Review Committee in its early formation recognized that a contributing factor to conflict in the Great Sand Hills area was a lack of scientific knowledge regarding the overall ecological impact by a variety of land uses on the sand hills ecosystem. Provincial and municipal decision-makers would have benefited from a strong base and integration of new applied science for the area. This was not possible and decisions were made, in part, with precaution in mind. Lack of knowledge will continue to hamper informed decision-making.

Broader research is needed to continue to manage the Great Sand Hills area. The Review Committee understands that there are costs associated with research and that there are questions about what research is needed. Government must collate and make past research available; there are numerous studies completed that are associated with existing developments. This information needs to be organized. Research into natural resource use and impacts from development, gas and ranching, and tourism will strengthen long-term management of the Great Sand Hills area.

Government can, through implementing the recommendations above and considering a landscape style environmental assessment of the Great Sand Hills, help future administration make and be more comfortable with the decisions they make. The assessment should include the concept of addressing cumulative effects.

4.2.4 Principle of Local Partnership

The Review Committee believes that people most impacted by land use and resource management decisions must be meaningfully involved in those decisions. There is a continuing strong local interest to be a part of decision-making. The cooperation (municipal and provincial) of the past decade has guided land administration and raised the standards for development and operations in the Great Sand Hills area.

The Review Committee recommends that government continue with and strengthen partnerships with the municipalities for local area management.

4.2.5 Principle of Public involvement

Public involvement is a hallmark of most Crown resource planning processes. The public is the conscience that brings balance between development and protection. The Review Committee recommends that public involvement continue to be an important component of decision-making in the Great Sand Hills area. The RMs and provincial government should continue to bring a public perspective to their decision processes.

4.2.6 Principle of Compliance and Enforcement

The Review Committee has concerns that the best intentions of provincial rules and regulations will have little ability to deal with real life environmental events. Indeed there will be many pressures on all land users to act responsibly and ensure situations are remedied. There are recent examples to draw upon. Companies are compelled to conscientiously mitigate disturbance through, as much as anything, peer pressure.

The Review Committee recommends that the government address the perceived inability of government to respond convincingly to environmental situations. There is also an opportunity here to strengthen provincial and municipal enforcement efforts through alignment of roles and responsibilities.

4.2.7 Principle of Dedicated Resources

It will take significant resources to implement these recommendations. Resources, as much as possible, should be identified and dedicated to the implementation of these recommendations. It will not be possible for the government, the municipalities or the industries to do this alone. In order to provide the best management for the Great Sand Hills area partnerships must be fostered and formed.

Stewardship should not be a single interest based value; Saskatchewan will benefit as a culture of cooperative relationship is built between environmental and industrial interests.

5.0 SUMMARY

The Review Committee acknowledges that this is an opportunity for provincial and local governments to continue to work cooperatively to develop standards that not only protect the unique landscapes of the Great Sand Hills, but also to allow for the development of the gas reserves underlying the area and the grass resources on the surface. As this is accomplished, it is important to maintain strong local input into the area's long-term management.

In order for all these recommendations to work most effectively, a comprehensive implementation plan needs to be written which would guide management in the Great Sand Hills. The current Great Sand Hills Development Plan may be revised to act as a short-term surrogate. Part of the plan would be the creation and implementation of accepted practices and standards to meet ecological needs while current land use continues and development takes place. There is an opportunity to 'raise the bar' from an environmental standpoint as municipal zoning would be supported or replaced by provincial regulations.

In the end, the implementation recommendation will recognize the partnership between the provincial and municipal (local) authorities for management of the area. A combination of the following features:

- one environmental impact assessment for the area,
- the formation of either an advisory or formalized administrative board, and
- a comprehensive implementation plan for the area

will give direction for land use and resource management in the Great Sand Hills area.

Anticipating that government will take a decision to implement these recommendations and principles, the Review Committee has considered the following:

In the short-term:

a) For the additional and existing protected lands, immediately:
- designate under provincial legislation
- define allowable land uses in regulation
- describe environmental practices in regulation
- describe enforcement abilities in regulation
- identify advisory and public interests

b) For interim period prior to government decision and environmental impact assessment

- Utilize established directions and approval processes for areas outside new protected lands

c) Conduct an environmental impact assessment

In the medium-term:

- Clarify roles and responsibilities of provincial agencies and municipal councils
- Create and formalize partnership (a board) between provincial agencies and municipal councils for management of Great Sand Hills area
- Identify the responsibilities of the board to enable management the Great Sand Hills area

And, In the long-term:

- Prepare provincial land use policy that would clarify the provincial role in development decisions by providing clear direction to municipalities, industry groups and the public.

6.0 OUTSTANDING ISSUES BEYOND THE SCOPE OF THE REVIEW

The Review Committee has heard from many interests and most of the concerns that have been raised are properly within the Review Committee's Terms of Reference. There are issues that simply cannot be addressed by the Review Committee. These are noted here because they were brought forward by public, industry, environmental, municipal and provincial interests.

1. Treaty Land Entitlement (TLE)
2. Zoning / management beyond the review area in other municipalities with similar landscapes
3. Uncertainty around gazing lease land renewal

APPENDIX A: Biophysical characteristics of the Great Sand Hills area[1]

Climate

The climate of the Great Sand Hills is described as a cold, semi-arid steppe climate. "Some years are moister with the cold sub-humid climate from further north shifting into this region, while in other years, the cold, semi-arid climate prevails" (Epp and Townley-Smith 1980:20).

Monthly mean temperatures range from approximately -14 degrees Celsius in January to approximately 19 degrees Celsius in July. Recorded temperature extremes are -42.8 degrees Celsius which occurred in January and 40 degrees Celsius which occurred in July (Environment Canada Atmospheric Services).

The Great Sand Hills region receives on average 316 mm of precipitation annually; 245 mm of rain, and 71.4 mm of snow (Environment Canada Atmospheric Services).

The prevailing winds are from the northwest with a mean annual wind speed of 24 km/h. Monthly mean wind speeds range from 20.5 km/hr July to26.4 km/h in January. The strongest recorded wind gust was 140 km/h and the maximum recorded hourly wind speed was 112 km/h (Environment Canada Atmospheric Services).

Wind has a major effect on evaporation rates and significantly affects landform features. "The dominant orientations of parabolic dunes, linear streets between dune clusters, and dune tongues all trend largely east-west, indicating prevailing westerly winds" (Mollard et al. 1990). High groundwater tables in deep depressions between dunes, suggest that there is little external runoff out of the dune area and that rain and snowmelt quickly infiltrates to the water table, causing it to rise and stabilize vegetation (Mollard et al. 1990:12).

The western sections of the Great Sand Hills tend to be more susceptible to destabilization from prevailing westerly winds. This is indicated by large blowouts and large bare sand patches. Drought conditions also influence dune stability. However, David (1972) believes that 20 to 30 years of drought are necessary to produce climate-induced, large-scale dune activity.

Climatic conditions have been important factors in producing the physical features of the Great Sand Hills and in determining the biological resources that exist there. Climate is also a major land use factor. Based on historical evidence, climate induced changes in the Great Sand Hills are possible, but change will likely occur very slowly.

Landforms

The Great Sand Hills are located within the physiographic region known as the third prairie level, Alberta High Plains(Hart and Hunt, 1980) or Alberta Plateau Region (Richards 1969:41). In Saskatchewan, the third prairie level comprises all lands west of the Missouri Coteau to the western boundary of the province.

From: Great Sand Hills Land Use Strategy, 1991: Pages 5-11
(Please see web page http://www.se.gov.sk.ca/ecosystem/land%20use/default.asp)

Regionally, the Great Sand Hills are part of a larger natural region known as the Bigstick Lake Plain (Barclay and Weichel 1979) which lies between the South Saskatchewan River to the north and Cypress Hills upland to the south. This region consists of glacio-fluvial, glacio- lacustrine and morainal deposits of undulating to rolling topography. In several areas the glacio-fluvial deposits including outwash and delta plains have been reworked by wind action to form sand dunes and interesting dune complexes.

The Great Sand Hills area is the largest of the sand dune complexes within the region. It is dominated by aeolian landforms where sand deposits were laid down by glacial meltwaters and subsequently modified and reworked by wind. The Great Sand Hills thus comprise stabilized dunes and active sand dunes of varying shape and height interspersed with areas of sand flats.

The Great Sand Hills name can be misleading by conjuring an image of great relief and topography. The entire north section lies almost entirely between 708.8 metres (2325 feet) and 747.0 metres (2450 feet) above sea level (a.s.l.), a vertical difference of 38.2 metres (125 feet). Few individual dunes rise more than 15 metres (49.2 feet) above the surrounding plain. The 'ruggedness' of the topography is the result of steeply sloping dunes located close together.

Factors of relief, frequency or density of dunes, slope steepness and the presence of active or stabilized dunes were used to create a detailed classification of landforms by Epp and Townley-Smith (1980). Eight distinctive landforms were the identified within the north section of the Great Sand Hills which is the main focus of this land use study. These are listed below.

1. sand flat:
   level topography, very low frequency of dunes, very low dunes under 2 m, no active sand, 3.6% of the north section;

2. low stabilized dunes:
   local steep slopes, high frequency of dunes, low dunes under 3 m, no moving sand, 7.8% of the north section

3. high stabilized dunes:
   local steep slopes, high frequency of dunes, dunes over 3m no moving sand, 57.6% of the north section;

4. sand flat- low stabilized dunes:
   local steep slopes, intermediate frequency of dunes, low dunes under 3 m, no moving sand, 14.9% of the north section;

5. sand flat- high stabilized dunes:
   local steep slopes, intermediate frequency of dunes, high dunes over 3 m, no moving sand, 5.5% of the north section;

6. low-high stabilized dunes:
   local steep slopes, high frequency of dunes, variable dune height, no moving sand, 9.8% of the north section;

7. active complexes:
   local steep slopes, variable dune frequency, variable dune height, moving sand, 0.5% of the north section;

8. intermittent lake beds:
   flat, no moving sand, 0.2% of the north section.

The distribution of landforms is shown in Map 2 (page 8, 1991 Great Sand Hills Land Use Strategy). Much of the central part of the Great Sand Hills and over half of the total area is formed of the high stabilized dunes landform. In this landform, dunes are over 3 m (9.8 feet) in height and variations are dependent on the extent of level ground between individual dunes and the amount of relief of the dunes.

Active dunes comprise a very small percentage of the total area although they provide the popular image of the hills. The active dunes occur in four distinct clusters in the Straw Road, Yakowan, Rastad and Wachiwan areas (see Map 2). These tend to be the highest relief areas within the Hills. The combination of high relief and active dunes creates the most spectacular of the landscape features of the Hills.

A variety of dune types have been identified within the Great Sand Hills area. The most significant work on classifying the various types has been done by Dr. Peter David of the University of Montreal and by Dr. Jack Mollard of Regina. Their work identified blowout and parabolic dunes as the most common types, as well as "windpits, deflation areas, circular, V- and U- shaped, shield, ridge-sided and fishhook dunes as well as elongated border ridges"(Mollard 1990:6). Various types of dunes also combine to form complex dune associations

There are few waterbodies within the Great Sand Hills. The presence of several dry lake and slough beds attests to former conditions of higher precipitation. These shallow water bodies are in fact the surface manifestation of a high ground water table. The coarse texture of the sandy soil leads to rapid internal drainage of any precipitation. This high degree of infiltration combined with low rainfall and snowfall have prevented the development of a surface drainage system. There are no streams, creeks or rivers within the northern section of the Great Sand Hills

The Saskatchewan Institute of Pedology has classified the soils of the area as being susceptible to wind erosion, once surface disturbance has taken place. The sparse ground cover, limited organic material, low moisture holding capacity of the soil and broken topography create a situation of great sensitivity to disturbance.

The Great Sand Hills have been largely uncultivated due to the sandiness of the soil and the sharply divided topography. The land is much more suited to grazing than to cereal crop production.

The rugged topography has presented a constraint to settlement and road development with the result that only one road crosses the Hills, and all ranches are located at the periphery.

The sensitivity of the Great Sand Hills to disturbance presents a constraint to a variety of human and economic activities including cultivation, settlement, grazing and intensive infrastructure development

The Saskatchewan Parks System Plan has identified that the Great Sand Hills natural zone is currently not represented in the parks system. The Parks System Plan recommends that representative and unique portions of the Great Sand Hills be protected pending the results of the public review process for the Land Use Strategy.

Flora and Fauna

The Great Sand Hills are a unique ecosystem rich in flora and fauna. The moratorium area probably contains the greatest expanse of native vegetation in the Great Sand Hills which, combined with the rugged terrain, provides excellent habitat for many species of wildlife. The rough terrain and sandy soils have prevented significant agricultural cultivation, urban or industrial development. This has resulted in an island of relatively intact native prairie surrounded by cultivated lands.

Epp and Townley-Smith (1980) produced a list of the vertebrate fauna of the Great Sand Hills. They reported that the Great Sand Hills are home to five species of amphibians, 70 species of birds and 19 species of mammals. No reptiles were found in their study.

At least three species of animals found in the Great Sand Hills are classified by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as threatened, rare or endangered. These are: ferruginous hawks *(Buteo regalis)*, burrowing owls *(Speotyto cunicularia)* and prairie long-tailed weasels *(Mustela frenata)*. Ferruginous hawks are found throughout the sand hills whereas burrowing owls are distributed mainly around the edge and in the flat areas. The distribution of the long-tailed weasel has not been determined. Ord's kangaroo rat *(Dipodomys ordii)* is a desert adapted animal unique to sand hill areas (Epp and Townley-Smith 1980:83). The distribution and status of the Ord's kangaroo rat have not yet been determined, and therefore the species has not been classified by COSEWIC. Other endangered or threatened species such as piping plovers *(Charadrius melodus)* and loggerhead shrikes *(Lanius ludovicianus)* may occupy portions of the Great Sand Hills for periods of the year. The importance of the Great Sand Hills area for these species is unknown.

The distribution and status of game species in the Great Sand Hills are well documented. Important game species include: mule deer *(Odocoileus hemionus)*, white-tailed deer *(Odocoileus virginianus)*, pronghorn antelope *(Antilocapra americana)* and sharp-tailed grouse *(Pedioecetes phasianellus)*. Hunting is an important land use practice in the Great Sand Hills, and is described in detail in Section 3.4.

The distribution and density of plant species in the Great Sand Hills are determined by several factors including: climate, topography, aspect, depth to groundwater, the present state of soil activity (stabilized versus destabilized) and current land use. A detailed inventory of the flora of the Great Sand Hills was not attempted in preparing this land use plan. However, a gross vegetation map was prepared using 1:80,000 and 1:24,000 scale airphotos (Mollard et al. 1990).

Previous vegetation surveys were also used to describe the vegetative resources of the Great Sand Hills. A sample plant species survey was conducted in the Great Sand Hills in the 1970s by Epp and Townley-Smith (1980). They developed a list of vascular plants, but did not attempt to map species distribution in the entire Great Sand Hills.

Deciduous trees found scattered throughout the Great Sand Hills are primarily plains cottonwood *(Populous deltoides)* and trembling aspen *(Populous tremuloides)* (Mollard et al. 1990). Both species are indicative of moist habitats. The largest area of plains cottonwoods occurs in the southwestern portion of the moratorium area and has been designated as a Special Use Zone (see section 3.1 – page 17, 1991 Great Sand Hills Land Use Strategy).

Dense growths of shrubs are also found in the Great Sand Hills including: sage brush *(Artemisia cana)*, rose *(Rosa sp.)*, snowberry *(Symphoricarpos occidentalis)*, wolf willow *(Elaeagnus commutata)*, creeping juniper *{Juniperus horizontalis)*, bearberry *(Arctostaphylos uva-ursi)*, choke cherry *(Prunus virginiana)* and Saskatoon berry *(Amelanchier alnifolia)*.

The dominant grass species present include: spear grass *(Stipa comata)*, sand grass *(Calamovilfa longifolia)*, june grass *(Koeleria cristata)* and wheat grasses *(Agropyron sp.)*. Blue grama *(Bouteloua gracilis)* is also present but less dominant. A variety of perennial forbs are also found in the Great Sand Hills, with hairy golden aster *(Chrysopsis villosa)* being one of the most common. Others include: skeletonweed *(Lygodesmia juncea)*, yellow flax *(Linum rigidum)*, wild begonia *(Rumex venosus)* and scurf pea *(Psoralea lanceolata)*. Scurf pea and wild begonia are usually the first to invade active sand surfaces.

Six plant species considered to be rare in Saskatchewan have been found in the Great Sand Hills (Epp and Townley- Smith 1980). Downingia *(Downingia laetq)* has been found at Crane Lake and Skull Creek. This plant has not been found anywhere else in Western Canada (Epp and Townley-Smith 1980:39). The other rare plants are yucca *(Yucca glauca)*, which may have been introduced to the area, annual skeleton weed *(Lygodesmia rostrata)*, prickly milk-vetch *(Astragalus kentrophyta)*, small lupine *(Lupinus pusillus)* and Schweinitz's cyperus *(Cyperus schweinitzii)*.

In addition to completing a plant species survey, Epp and Townley-Smith (1980) were able to identify 11 vegetation communities in the Great Sand Hills according to landscape type and aspect. The major vegetative-landscape units were dunes, sand flats, erosion areas, deposition areas and aspen understory areas.

Air Quality

The quality of air can be described by the amount of foreign gaseous and particulate material present. Monitoring of air quality in Saskatchewan has focused on urban centres and larger facilities which burn fossil fuels or emit particulates from production processes. Swift Current is the only location in southwest Saskatchewan where air quality is monitored.

The main sources of air emissions in the Great Sand Hills area include: gas wells, compressor stations, vehicle motors and the sodium sulphate plant at Ingebrigt Lake. Emissions from these sources are not considered to be a concern to human health nor to plants and animals. Emissions from burning of fossil fuels may in future be subject to additional regulation, if further steps are taken to control greenhouse gases.

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[i] This information has been excerpted from the 1991 Great Sand Hills Land Use Strategy (pages 5-11) and although much of the information is dated, the characteristics of vegetation and terrain of the Great Sand Hills has not changed. Any numbers referenced in this appendix may be outdated. The 1991 Great Sand Hills Land Use Strategy is available in electronic form on Saskatchewan Environment's web: http://www.se.gov.sk.ca/ecosystem/land%20use/default.asp

APPENDIX B: Glossary (words used in report or in discussion during the review)

“acid rain” (acid precipitation or acid deposition) is precipitation containing harmful amounts of nitric and sulfuric acids formed primarily by nitrogen and sulfur oxides released into the atmosphere. It can be wet precipitation (rain, snow or fog) or dry precipitation (absorbed gaseous and particulate matter, aerosol particles or dust). Rain water is naturally slightly acidic but increased levels causes damage to crops, buildings and wildlife and is often indirectly damaging to humans;

“aeolian” pertaining to the wind. Means landforms generated by the wind, or sediments transported by the wind (e.g. the Great Sand Hills areas);

“agricultural lease” means a lease of provincial Crown lands for the purpose of growing crops, grazing livestock, harvesting hay, or establishing or operating a domestic game farm;

“animal unit month” (AUM) the amount of forage required to sustain a 1000 pound cow with or without a sucking calf of 6 months of age or less for a period of one month;

“arable land” means land which, in the opinion of the minister, is suitable for the production of cereal or other seed or forage crops and can be improved for such purpose by clearing and breaking;

“associated completion” means a completion with separate production strings cemented in a single bore hole;

“battery” means common storage facilities receiving production from a well or wells and includes equipment for separating the fluid into oil, gas and water and for measurement;

“biological diversity” (biodiversity) has no single standard definition. One definition holds that biological diversity is a *measure of the relative diversity among organisms present in different ecosystems*. Diversity in this definition includes diversity within species, among species, and comparative diversity among ecosystems. Another definition, simpler and clearer, but more challenging, is the *totality of genes, species, and ecosystems of a region*;

“blow-out” means an uncontrolled escape of fluid from a well or an area of sand that is ‘blown out’ by the wind;

“blow-out preventer” means a special casing head used in rotary drilling, well completions and workovers to prevent the uncontrolled escape of fluid from a well;

“Bylaws” regulations made by the local authority (municipality) that provide the legal basis for local decision-making;

"carrying capacity" means the average potential forage growth of a pasture expressed in animal unit months;

"cattle" means animals of the bovine species. The substitution of other animals is permitted (e.g. twenty sheep or three horses is the equivalent of four head of cattle);

"casing-head gas" means any gas, vapour or combination of gas or vapour indigenous to an oil stratum and produced with oil from that stratum;

"casing pressure" means pressure in the annulus between tubing and casing measured at the casing head of a well;

"caucus" means a group of two or more members who belong to the same political party;

"CDI" means cabinet decision items;

"completion" means a) the techniques of preparing a newly drilled well for production and b) the activities and methods necessary to prepare a well for the production of oil and gas; the method by which a flow line for hydrocarbons is established between the reservoir and the surface. The method of well completion used by the operator depends on the individual characteristics of the producing formation of formations. These techniques include open-hole completions. conventional perforated completions, sand-exclusion completions, tubingless completions, multiple completions, and miniaturized completions;

"contaminant" means any substance, whether gaseous, liquid or solid, that: is foreign to or in excess of the natural constituents of the environment; or affects the natural, physical, chemical or biological quality of the environment; and that is or may be injurious to the health or safety of persons or injurious or damaging to property or to plant or animal life;

"Crown" means Her Majesty the Queen in right of Saskatchewan;

"Crown land lease" means any agreement creating a bona fide tenancy between a landlord and tenant, in respect of agricultural land, which provides for payment of the rent reserved, or any part thereof, or for payment in lieu of rent, by the tenant delivering to the landlord or to his order a share of the crop grown or to be grown on such land, or the proceeds of such share;

"Crown land disposition" means the act of disposal or an instrument by which that act is affected or evidenced, and includes a Crown grant of land, order in council, transfer, assurance, lease, licence, permit, contract or agreement and every other instrument whereby lands or any right, interest or estate in land may be transferred, disposed of or affected, or by which the Crown divests itself of or creates any right, interest or estate in land;

"Crown mineral disposition" means the rights granted by the Crown under a Crown lease or any other instrument issued under this *Crown Mineral Act*, or under any predecessor statute, by which the Crown has granted to any person any right or privilege to explore or prospect for any Crown mineral, or any other right to or interest in any Crown mineral or any Crown mineral lands;

"Crown mineral disposition area" means the surface area of the land to which the rights comprising a Crown mineral disposition relate;

"Crown mineral disposition lands" means the Crown mineral lands contained within the boundaries of the disposition area continued vertically downward on all sides of the disposition area, excluding any Crown mineral lands specified in the disposition document as not included in the disposition;

"Crown mineral lands" means the mineral interest of the Crown in any lands in Saskatchewan whether or not the surface rights in any of those lands are also the property of the Crown;

"Crown mineral land holder" means the person who is shown in the records of Saskatchewan Industry and Resources as the owner of a Crown disposition;

"Crown mineral lease" means a lease issued under the *Crown Mineral Act*, or under any predecessor statute, by which the Crown has granted to any person the right to extract, recover or produce any Crown mineral;

"Crown mineral" means any mineral that may be found on, in or under any Crown mineral lands;

"cut line" means a line cut through vegetation in the course of geophysical exploration and includes tailspreads;

"decommissioning" means the removal or permanent retirement from service of all or part of a production unit, and includes actions directly associated with the removal or retirement;

"deeper rights" means the petroleum, natural gas or petroleum and natural gas rights in a Crown lease below the base of the deepest productive zone;

"deepest productive zone" means the deepest zone, as determined by the minister, within a Crown lease from which, in the opinion of the minister, petroleum, natural gas or petroleum and natural gas: is being produced in commercial quantities; or is capable of being produced in commercial quantities, as determined by the minister in accordance with the regulations;

"dehydrator" means an apparatus designed and used to remove water from gas;

"development" with respect to *The Environmental Assessment Act* means any project, operation or activity or any alteration or expansion of any project, operation or activity which is likely to: have an affect on any unique, rare or endangered feature of the environment or substantially utilize any provincial resource and in so doing preempt the use, or potential use, of that resource for any other purpose or cause the emission of any pollutants or create by-products, residual or waste products which require handling and disposal in a manner that is not regulated by any other Act or regulation or cause widespread public concern because of potential environmental changes or involve a new technology that is concerned with resource utilization and that may induce significant environmental change or have a significant impact on the environment or necessitate a further development which is likely to have a significant impact on the environment;

"development" with respect to the rural municipality planning and development activities means, the carrying out of any building, engineering, mining or other operations in, on or over land or the making of any material change in the use or intensity of the use of any building or land;

"development permit" with respect to the rural municipality planning and development means a document authorizing a development issued pursuant to a zoning bylaw or a development control adopted by the minister of GRAA;

"drainage unit" means the area allocated to a well for the purpose of drilling for and producing oil or gas and includes subsurface areas bounded by the vertical planes in which surface boundaries lie;

"ecology" means the branch of science that studies habitats and the interactions between living things and the environment;

"ecoregions" means a relatively large units of land or water containing a distinct assemblage of natural communities and species, with boundaries that approximate the original extent of natural communities prior to major land-use change;

"ecological reserve" means any Crown land in the province designated under clause 4(1)(a) of *The Ecological Reserves Act* which sustains or is associated with unique or representative parts of the natural environment. Regulations pursuant to *The Ecological Reserves Act* specify the types of activities that can be conducted within a specific ecological reserve;

"ecosystem" is a community of organisms (plant, animal and other living organisms - also referred as biocenose) together with their environment (or biotope), functioning as a unit;

"entitlement band' means any Indian band that is a party to the Saskatchewan Treaty Land Entitlement Framework Agreement dated September 22, 1992 and entered into by Her Majesty in right of Canada, Her Majesty in right of Saskatchewan and certain Indian bands with respect to the settlement of the outstanding treaty land entitlement claims of the Indian bands";

"environment" means air, land, water; plant and animal life, including man; and the social, economic and cultural conditions that influence the life of man or its community;

"environmental impact assessment" means an environmental impact assessment required under section 9 of *The Environmental Assessment Act* ;

"environmental impact statement" means an environmental impact statement required under section 9 of *The Environmental Assessment Act*;

"environmental monitor" means a person who meets the definition and qualifications specified in Saskatchewan Petroleum Industry /Government Environment Committee Guideline No. 6, dated January, 2002 and titled *Required Qualifications Field Environmental Monitors For Oil and Natural Gas Exploration and Development Projects*; www.se.gov.sk.ca/environment/assessment/Env_Monitor_Gline.pdf;

"environmentally sensitive land" {including environmentally sensitive one (ES1), and environmentally sensitive two (ES2)} is land identified by the rural municipality's zoning district map as having environmental sensitivities. This zoning district map is attached to and forms part of the rural municipality's zoning bylaw and is used by the rural municipality for land use administrative purposes. The zoning bylaw lists the permitted and discretionary uses allowed within the lands identified as environmentally sensitive subject to the environmental protection requirements prescribed within the zoning bylaw;

"gas" means natural gas, both before and after it has been subjected to absorption, purification, scrubbing or other treatment or process, and includes all liquid hydrocarbons other than oil and condensate;

"gas field" means the general area underlaid by one or more gas pools;

"gas-oil ratio" or **"GOR"** means the ratio of the number of cubic metres of gas produced from a given source in a given period to the number of cubic metres of oil produced from that source in that period of time;

"gas well" means a well that is capable of producing gas not associated with oil at the time of production; that part of a well in which the gas-producing zone is successfully segregated from the oil and in which gas is produced separately from the oil; a well from which gas is or is capable of being produced from a reservoir in association with no more than one cubic metre of oil for every 3,500 cubic metres of gas produced from the reservoir; or any other well that may be classified by the minister of Saskatchewan Industry and Resources;

"geophysical exploration" means any method whereby a physical science is applied or used to determine geologic of other conditions in the subsurface that may lead to the discovery of minerals and mineral resources and includes, but is not limited to the following operations: seismic; gravimetric; magnetic; electrical; geochemical; radiometric; and logging of wells;

"Great Sand Hills District Planning Commission" an advisory body with membership from the municipalities of the R.M. of Pittville No. 169, R.M. of Fox Valley No. 171, and the R.M. of Clinworth No. 230. The purpose of the Commission is to facilitate inter-municipal cooperation regarding consistent land use decisions amongst the affiliated municipalities;

"Great Sand Hills Land Use Strategy Review Committee" means the Review Committee comprised of representatives of Saskatchewan Environment, Saskatchewan Industry and Resources, Saskatchewan Agriculture, Food and Rural Revitalization, Saskatchewan Government Relations and Aboriginal Affairs, the RMs of Piapot, Fox Valley, Pittville and Clinworth and the Great Sand Hills Planning District Commission created by Cabinet for the express purpose of reviewing the Great Sand Hills Land Use Strategy, 1991 and providing recommendations to Cabinet on future land use in the Great Sand Hills;

"ground truthing" is the activity of visiting the land location to confirm assumptions made through analysis of aerial photographs or satellite imagery;

"Facility Area" is a management area identified in the 1991 Great Sand Hills Land Use Strategy. The intent of this area was to recognize existing facilities such as ranches and pipelines and to provide for future facility development areas;

"flowline" means a pipeline connecting a wellhead and an oil battery facility; a fluid injection facility; or a gas compression facility; and includes a pipe or system of pipes for the transportation of fluids and gases within any of those facilities;

"horizontal well" means a well with a portion drilled at an angle of at least 80 degrees from vertical, measured from a line connecting the initial point of penetration into the productive zone to the end point of the wellbore in the productive zone; with a minimum wellbore length of 100 metres, measured from the initial point of penetration into the productive zone to the end point of the wellbore in the productive zone; and that is approved by Saskatchewan Industry and Resources; or any other well approved for by Saskatchewan Industry and Resources as a horizontal well;

"improvement" means: a building or structure erected or placed on, over or under land or over or under water, but does not include machinery and equipment, unless the machinery and equipment is used to service the building or structure; anything affixed to or incorporated in a building or structure affixed to land, but does not include machinery and equipment unless the machinery and equipment is used to service the building or structure; the resource production equipment of any oil or gas well or mine in the municipality; and any pipeline on or under land in the municipality;

"Indian band" means a band within the meaning of the *Indian Act* (Canada) and includes the council of a band;

"lands" or **"land" (surface)** extends to and includes lands, messuages, tenements and hereditaments, corporeal and incorporeal, of every kind and description, whatever may be the estate or interest therein and whether legal or equitable, and, subject to this Act, all paths, passages, waters or watercourses, liberties, privileges, easements, mines and minerals, precious and base, and all trees and timber thereon;

"landowner" means a person who has any right, title, estate or interest in any land or improvement other than that of an occupant or a mortgagee;

"livestock" or **"stock"** means any grazing animal that is raised in captivity;

"mine" means any facility in Saskatchewan for extracting, recovering or producing any mineral except oil or gas;

"mineral" means any non-viable substance formed by the processes of nature, irrespective of chemical or physical state and both before and after extraction, but does not include any surface or ground water, agricultural soil or sand or gravel;

"Multiple Use Area" is a management area identified in the 1991 Great Sand Hills Land Use Strategy. The intent of this area was to provide for the management and development of the full range of available resources, while ensuring the protection of physical, heritage and biological resources of the Great Sand Hills;

"municipal road" means a public highway that is under the direction, management and control of a municipality pursuant to section 187 of ***The Rural Municipality Act, 1989***;

"municipality" means a rural municipality or a municipal district and **"municipal"** has a corresponding meaning;

"multi-zone well" means a well for the segregated production or injection from or into more than one zone through the same well bore;

"noxious weed" means any plant that the minister may designate in the regulations as a noxious weed for the purposes of *The Noxious Weeds Act, 1984*, and includes the seeds of that plant;

"occupant" with respect to the surface of the land means the resident occupier of land or, if there is no resident occupier of it: a person entitled to the possession of the land; or a lessee of the land;

"oil or gas pool" means an underground reservoir that: contains or appears to contain an accumulation of oil or gas; and is separated or appears to be separated from any other reservoir or accumulation in the general structure;

"oil or gas producer" means the owner of a well that is capable of producing oil or gas;

"oil and gas rights" means oil and gas rights offered for sale by the Crown pursuant to "The Petroleum and Natural Gas Regulations, 1969";

"oil or gas product" means a commodity made from oil or gas and includes refined crude oil, crude tops, topped crude, processed crude, processed crude oil, residue from crude oil, cracking stock, uncracked fuel oil, fuel oil, treated crude oil, residuum, gas oil, casinghead gasoline, natural-gas gasoline, lubricating oil, blends or mixtures of oil with one or more liquid products or by-products derived from oil or gas and blends or mixtures of two or more liquid products or by-products derived from oil or gas, whether or not mentioned herein;

"oil or gas waste" means physical waste as that term is ordinarily understood in the oil and gas industry; the inefficient, excessive or improper use of, or the dissipation of, reservoir energy; the locating, spacing, drilling, equipping or operating of or producing from a well in a manner that causes, or is likely to cause, reduction in the quantity of oil or gas ultimately recoverable from a pool under prudent and proper operations and practices, or unnecessary or excessive surface loss of oil or gas; the inefficient or improper storage of oil or gas;

"operator" means: a person who, as owner, lessee, sublessee or assignee, has the right to carry on well-drilling operations or operations for oil and gas production; a contractor who contracts for or engages in any well-drilling, completion, production or abandonment operations; or the person designated by the minister of Saskatchewan Industry and Resource as the operator of the well;

"owner" means a person who has the right to drill into a pool and produce therefrom oil or gas and to appropriate the oil or gas he produces either to himself or others or to himself and others;

"parcel" means the whole or any part of a lot or block in an approved plan, or a number of lots or blocks when assessed together, or any subdivided area of land used for a single assessment;

"pigging" means use of in-line tools (**"Pigs"**) for inspection and/or cleaning of flowline and pipelines;

"pipeline" means a pipe or system of pipes for the transportation of: oil or gas; or water or other fluids incidental to or used in the production of oil or gas; and includes tanks, tank batteries, pumps, compressors, racks and storage, loading and other terminal facilities and all real property necessary for the pipeline or used in connection with the pipeline and all other real and personal property required for the purpose of the pipeline or used in connection with or incidental to the pipeline, but does not include refining or marketing pipelines situated wholly within a plant property or gas distribution pipelines situated downstream of a pressure regulator in a city, town, village or hamlet;

"pollutant" means a substance, including a contaminant, which results, or is likely to result, in pollution of the environment;

"pollution" means alteration of the physical, chemical, biological or aesthetic properties of the environment, including the addition or removal of any contaminant, that: will render the environment harmful to public health; is unsafe for or harmful to domestic, municipal, industrial, agricultural, recreational or other lawful uses of the environment; or is harmful to wild animals, birds or aquatic life;

"Prime Protection Area" is a management area identified in the 1991 Great Sand Hills Land Use Strategy. The intent of the area was t o preserve environmentally sensitive terrain and biological and heritage resources;

"project proposal" or **"environmental protection plan (EPP)"** means The **EPP** is the document prepared by a proponent to describe how a project which raises significant environmental concerns or could otherwise trigger one or more of the criteria in *The Environmental Assessment Act* will be undertaken. It describes the project and project area, identifies conflicts and describes environmental protection measures the proponent will take to avoid or minimize those conflicts. For purposes of the Environmental Assessment process, the term **Environmental Protection Plan (EPP)** is equivalent to the term **Project Proposal**;

"proponent" means a person who proposes or desires to undertake a project with respect to *The Environmental Assessment Act*;

"protected lands" means land or area that is or has been identified for high levels of restriction or management. These lands or areas should receive designation under provincial legislation to restrict industrial development both on the surface and the subsurface;

"Protected Areas" mean locations which need and/or receive protection because of their environmental, cultural or similar value. A Protected Area as defined by the World Conservation Union (IUCN) as *a*n area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means. National parks are probably the best-known Protected Areas, but there are many other categories;

"provincial lands" (surface) means lands vested in the Crown except: park land within the meaning of *The Parks Act*; and lands vested in the Crown that are, pursuant to any Act, administered by any department of the government of Saskatchewan other than the

Department of Agriculture and Food Rural Revitalization or the Department of Environment;

"public work" means lands, streams, watercourses and property acquired for public works, dams or dugouts erected or made for the storage of water, roads, signs, culverts, bridges, ditches, sidewalks, wells, drains and public buildings and all improvements, alterations and additions made to any public work, and any work or service or any combination of work or services authorized pursuant to *The Local Improvements Act, 1993*;

"reclamation" means the rehabilitation, which may occur during the life of a project or following decommissioning, of all or part of the land, water or watercourses used or disturbed by the construction or operation of any facility or activity;

"reeve" means the reeve of a municipality;

"resource production equipment" includes fixtures, machinery, tools, railroad spur tracks and other appliances by which a mine or petroleum oil or gas well is operated, but does not include tipples, general offices, general stores, rooming houses, public halls or yards;

"road allowance" means a road allowance laid out under the authority of an enactment of Saskatchewan or Canada;

"rural municipality administrator" means the person appointed as the administrator of a municipality pursuant to section 49 of *The Rural Municipality Act, 1989*;

"rural municipal council" means the council of an rural municipality or any other municipal corporation and, in the case of a northern municipality, means the council of a town, northern village or northern hamlet or the minister or any person designated by the minister pursuant to section 2.1 acting on behalf of a northern settlement or the Northern Saskatchewan Administration District, as the case may be;

"rural municipal council" means the council of a municipality;

"rural municipality councillor" means a member of the council other than the reeve;

"rural municipal development officer" means the person appointed pursuant to a zoning bylaw to administer the zoning bylaw;

"Saskatchewan Treaty Land Entitlement Framework Agreement" means:

(i) the Saskatchewan Treaty Land Entitlement Framework Agreement dated September 22, 1992 and entered into by Canada, Saskatchewan and certain Indian bands with respect to the settlement of the outstanding treaty land entitlement claims of the Indian bands;

(ii) the Nekaneet Treaty Land Entitlement Settlement Agreement dated September 23, 1992 and entered into by Canada, Saskatchewan and the Nekaneet Indian Band with respect to the settlement of the outstanding treaty land entitlement claim of the Nekaneet Indian Band;

(iii) and any agreement entered into by Canada, Saskatchewan and an Indian band with respect to the settlement of the outstanding treaty land entitlement claim of that band on the same or substantially the same terms as the agreement mentioned in subclause (i) of this definition;

"separator" means an apparatus for separating liquid and gas at the surface as they are produced from a well;

"segregate" means to confine each fluid in a well to the proper zone or flow channel of that fluid so that the fluid is separated from all fluids in any other zone or flow channel;

"shot hole" means a hole drilled for the purpose of firing an explosive charge in connection with seismic exploration;

"Special Use Area" is a management area identified in the 1991 Great Sand Hills Land Use Strategy. The intent of this area was to protect unique areas or features by providing specific guidelines as required, and to accommodate uses that are not provided for within any of the other zones;

"structure" means a building and all things constructed, erected, placed or stored above or below the surface of the earth;

"structure test hole" means any hole drilled for the purpose of obtaining geological and structural information to a point below the glacial drift that is no deeper than the base of the Second White Specks horizon, but does not include: any hole drilled that penetrates a horizon that, in the opinion of the department, is capable of producing oil or natural gas in commercial quantities; or any hole drilled for seismic testing;

"surface lease" means a lease of provincial Crown lands issued in accordance with section 4 of Part III of *the Provincial Lands Regulations* for the exploration, recovery, storage or transportation of petroleum and natural gas;

"survey monument" means a stake, post, pin, mound, rock or other material marking the corner of a quarter section, a section, or triangulation point, and includes a monument as defined in The Land Surveys Act;

"treater" means an apparatus for separating oil, gas and water at the surface as they are produced from a well;

"unit" means a unit area with respect to which there is in effect either an agreement for unit operation or a unit operation order made pursuant to *The Oil and Gas Conservation Act* and the regulations made pursuant to that Act;

"vehicle" means a vehicle as defined in *The Highway Traffic Act*;

"vertical well" means any well that is not a horizontal well;

"waste processing facility" means a system or arrangement of tanks, treaters or other surface equipment that is intended to receive waste material from any oil or gas field operation for processing or disposition;

"water-covered area" means a surface area that is covered by flowing or standing water;

"weed inspector" means a weed inspector appointed by a RM council or by the minister of SAFRR pursuant to section 7 of *The Noxious Weeds Act, 1984;*

"well" means any opening in the ground, except seismic shot holes or structure test holes, made or being made by drilling or boring, or in any other manner through which oil or gas is obtained or is obtainable, or for the purpose of obtaining oil or gas, or for the injection of any fluid into an underground reservoir;

"wellbore" means an artificial opening in the ground other than a seismic shot hole or structure test hole and includes the total drilled length of the opening;

"wildlife habitat lands" means Crown lands designated as wildlife habitat lands pursuant to section 3 of *The Wildlife Habitat Protection Act;*

"working interest" means an interest acquired pursuant to a Crown lease, including an interest acquired from the person who is the holder of the Crown lease, where the interest: entitles a person to share in the oil or gas produced from or allocated to the Crown lands that are the subject of the lease or in the proceeds from the disposition of the oil or gas; and requires a person to bear or contribute to the costs associated with producing oil or gas from or allocated to the Crown lands that are the subject of the lease;

"zone" means any interval approved by the minister that is definable respecting a geological formation or geological unit;

APPENDIX C: Analysis, by Review Committee, of goal, objective and recommendation found in 1991 Strategy

Goal/ Objectives/ Recommendations (as found in the original strategy)	**Comments**	**Analysis**
1.2 Land Management Goal and Objectives		
Goal: To maintain the Great Sand Hills as a distinctive landscape for social, cultural and economic benefits	Provincial / Municipal process works to generally address social, cultural goal components but economic components have not been maximized. Some roadblocks to Petroleum and Natural Gas development are present Long term leasing by SAFRR provides tenure and protection to the native grass resource and the socio economic culture of the immediate area This is always an on-going process. With the adoption of Municipal Development Plans and Zoning Bylaws as well as formation of GSHPDC, efforts will continue.	Through the formation of the Planning Commission, establishment of a Development Plan and Zoning Bylaw for the Great Sand Hills area a significant step was made to reinforcing this goal. In addition, with the participation of provincial government agencies and departments, industry and stakeholder groups throughout the past 13 years strong efforts have been made to maintain this unique and distinctive landscape area. Long-term tenure by agricultural lessees has contributed to this initiative through the rancher's stewardship of the resources. Also, responsible development by the Petroleum and Gas industry has also helped to ensure a sustainable balance, which maintains the social, cultural and economic benefits to this landscape.
Obj: To maintain biological diversity and the processes necessary to sustain them.	The biodiversity of the GSH is largely still intact. Research conducted in 2002 indicates that any type of disturbance may provide opportunity for invasion by non-native plants, one of the greatest threats to biodiversity. Development proposals take this into consideration (gas industry, range management plans). Taken into consideration during gas development but not necessarily for other development The biodiversity of the GSH is largely still intact. However, the research conducted in 2002 indicates that the area is particularly sensitive to invasion by non-native plants. The GSH need to be protected from this serious threat by improved policy, regulation, management and monitoring Range management/range education helps to preserve and protect local biodiversity	This is one of the areas where all parties have identified further work. Invasive Species are seen as a significant problem which all players must address. Range Management and educational opportunities for the ranching industry have occurred with new grazing technologies being employed to prevent the erosion of the biological diversity of this area. Various study initiatives have been proposed over the past few years on cumulative impact, trail impacts, and activity impacts. Both the gas and ranching industry and all other stakeholders support these initiatives and in fact have undertaken these initiatives over the past few years This objective needs to be reinforced and funded to achieve this objective successfully. The Millie pasture was designated under the RAN-Representative Areas Network in 2002 with a MOU signed by the Sask. Stock Growers association and Sask. Wildlife Federation.
Obj: To protect both representative	Although the Prime Protection Areas established under the 1991	It would appear that, through the Review Process, a

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
and unique landscapes.	Strategy are examples of unique and representative landscapes, it is recognised that there may be other areas that need to be identified and protected. Addressed during gas development but not necessarily for other development The PPAs established under the 1991 Strategy are examples of unique landscapes. They are not representative landscapes. Areas more representative of the GSH need to be identified and protected. Prime protected areas have been designated and zoning bylaws implemented. Should 'recognize' instead of protect	significant amount of individuals feel that the Prime Protection Areas have not been fully protected under an effective long-term mechanism and that a better mechanism needs to be implemented. **SEE ANALYSIS UNDER 3.1.1**
Obj: To ensure sustainable use of renewable resources.	The renewable resources appear to be being used sustainably. Government policies (long term grazing lease agreements) and regulations (wildlife) provide framework toward sustainability. Some observations: Overall deer numbers appear to be healthy. The white-tailed deer continues to increase. A phenomenon related to the continuing increase in tree cover. Furbearer populations also appear to be healthy. Overall deer numbers appear to be healthy. The white-tailed deer continues to increase at the expense of the mule deer, a phenomenon related to the continuing increase in tree cover. Furbearer populations also appear to be healthy. Through SAFRR policies and favourable long term lease agreements ensures sustainable use of the grazing resource This is always an on going process as we learn more about advanced technology and the impacts. Mule deer increasing not whitetail	SAFRR continues to work with individual lessees, grazing co-ops and Community Pastures to develop better range management plans in this environmentally sensitive areas. SE continues to monitor the wildlife population health as well as the entire grassland ecosystem. Also the Millie Community Pasture is designated under the provincial RAN program and SAFRR and SE continue to work together to develop processes to ensure long-term sustainability of renewable resources.
Obj: To ensure that development of non- renewable resources occurs in an environmentally sound manner.	A three department co-harmonized review procedure is in place that offers a mechanism for ensuring development in an environmentally sound manner; in addition the Environmental Protection Plan (EPP)	Mechanisms have been in place since and prior to the Strategy of 1991. These mechanisms to deal with development in this area have been undergoing change and adaptations constantly

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
	and planning commission development plan and bylaws also provide protection at both levels of government. Sustainable and environmentally sound development of non-renewable resources (petroleum and natural gas in particular) is firmly integrated into Saskatchewan Industry and Resources legislation, regulations, mandate, objectives, goals, policies, guidelines and practices. In addition, the Petroleum Development Branch created an Environmental Affairs Unit in 1998. The sole responsibility of this unit's manager is to ensure proper environmental protection and enhancement with respect to petroleum and natural gas industry development and operations. SAFRR's current Restoration of Saskatchewan's Agricultural Crown Rangeland provides the standards for restoring native grasslands SIR and SE and SAF have appropriate guidelines	at all levels. The provincial government departments and agencies involved in gas activity have a "harmonized development review process" in place, which addresses the development in an environmentally sound manner. This process is continually being reviewed to achieve more effective mechanisms that apply in all areas of the province. SIR has developed many substantial environmental changes in regulations pertaining to industry activity over the past 12years, which have elevated the level of sustainable environmental management and development of non-renewable resources. SAFRR's restoration guidelines for native prairie that have been in place for over 8 years and are currently being reviewed to address the changes in restoration techniques and the increasing availability of native seed mixes. The participating municipalities in the Great Sand Hills Planning District have incorporated environmental provisions in their land use policy and zoning bylaws which have also been updated over the past 12 years to reflect the changing environmental concerns.
Obj: To protect heritage resources and support heritage awareness and understanding.	A three department co-harmonized review procedure is in place that offers a mechanism for ensuring development in an environmentally sound manner; in addition the EPP and planning commission development plan and bylaws also provide protection at both levels of government. In addition, through the Heritage Property Act, heritage property is protected. The petroleum and natural gas industry have identified specific sites during their environmental protection plan surveys and have passed this information on to proper authorities. Many unknown sites have been identified and catalogued as result of this process. If other	Clear reference to this was made in the Development Plan and Zoning Bylaws of 1994 and 1998 specifically referring to Heritage Resources in the Policy sections. EPP's must address Heritage Resources and in fact as development has been proposed and conducted in the GSH area more specific Heritage Resource information has been compiled.

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
	industries have to do likewise this objective will be met. Should 'recognize' instead of protect	
3.1.1 Prime Protection Areas		
Rec: 1.Establish the Yakowan (12 sections) and Rastad (21 Sections) Areas as Prime Protection Areas to protect these sensitive landscapes from significant alteration, to protect examples of the variety of landforms that exist in the Great Sand Hills and to provide undeveloped areas for individuals seeking wilderness or solitude opportunities.	Saskatchewan placed Prime Protection Areas (PPAs) under a crown reserve that ensures mineral development of any kind could not occur in this area. Development plan and zoning bylaws may provide protection from significant alteration. Other uses are not limited or excluded as no specific 'protection' designation applies to these areas. Done in sense of withdrawing mineral rights. Not aware of any other management changes to further the "protection" objective Sask Industry and Resources bought back petroleum and natural gas leases from companies then placed area under a crown reserve to ensure mineral development of any kind could not occur in this area. What else has been done? These PPAs are only protected through zoning by-laws. There level of protection needs to be increased Established following GSH Land Use Strategy of 1991. It is anticipated that Municipal bylaws will offer continued protection for these areas from gas and oil development, and keep them as a representative area of that specific landscape. Does this apply to TLE	These areas were in fact set aside as Prime Protection Areas and were subsequently zoned as Environmentally – Sensitive (ES) under the initial GSH Development Plan and Zoning Bylaw in 1994. The Development Plan recommended these areas be set aside as" Environmental Reserves" under the Planning and Development Act. SIR formally SEM, initiated the establishment of Crown Mineral Reserves for these areas. It should be noted that this designation precludes the sale of these mineral rights except for in the case of TLE where they may be transferred to the Federal Government on behalf of First Nations should the surface be made available through the TLE process. The New Development Plan and Zoning Bylaw again zoned these lands ES-1 and recommended the areas to be designated under the Planning and Development as "Environmental Reserve". Discussion took place with affected agricultural lessees who were prepared to accept this designation as it would not adversely affect the ranching activity except it would not allow digging of dugouts and similar significant disturbances. The Commission and participating councils endorsed exploring this initiative, however, details to implement this option would have required: the Crown to relinquish ownership by transferring the lands to the rural municipalities, rural municipalities to manage the land according to the *Planning and Development Act, 1983* and for the parties to address current lease arrangements.
Rec: 2. Establish the Wachiwan Area (3/4 Section) as a Prime Protection Area to protect its sensitive landscape from significant alteration.	Saskatchewan placed PPAs under a crown reserve to ensure mineral development of any kind could not occur in this area. Development plan and zoning bylaws may provide protection from significant alteration. No specific 'protection' designation applies to these areas and as such other uses are not limited or excluded. Done in sense of withdrawing mineral rights. Not aware of any other management changes to further the "protection" objective	SEE ABOVE

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
	Sask Industry and Resources bought back petroleum and natural gas leases from companies then placed area under a crown reserve to ensure mineral development of any kind could not occur in this area. What else has been done? This PPA is too small "to protect the sensitive landscape from significant alteration". Its level of protection should also be increased. This has been established. As above.	
Rec: 3. Establish the Straw Road Area (3 Sections) as a Special Use Area to protect the sensitive landscape from significant alteration and to provide for recreational opportunities such as picnicking and hiking.	Saskatchewan placed PPAs under a crown reserve to ensure mineral development of any kind could not occur in this area. Development plan and zoning bylaws may provide protection from significant alteration. No specific 'protection' designation applies to these areas and as such other uses are not limited or excluded. Improvements for recreational access in place Done in sense of withdrawing mineral rights. Some rudimentary improvements for recreational access in place This area is too small "to protect the sensitive landscape from significant alteration…." This has been established. Interpretive signage for the area has not been finished yet. It's still being worked on. Designated parking area has been established for "day-use" only. Some access trails in the immediate area have been closed as per wishes of land occupants. Interpretative signage to be set up in near future.	SEE ABOVE. Through work with the Commission, affected grazing groups and government agencies established a working committee to set up an interpretive area at the head of the Straw Trail. The initiative was municipally undertaken with a turnaround, parking and some trail establishment. Further co-operation and funding for interpretive signage is still being pursued.
Rec: 4. Establish the Cottonwood area, Crane Lake, and Skull Creek as Special Use Areas and establish development guidelines for these areas. This will require surveys for rare, threatened and endangered species.	These areas have not been zoned or otherwise formally designated. Existing bylaws and development guidelines would apply to activities in these areas. Development was proposed in and approved as part of Lone Pine / Ocelot 1994 Environmental Impact Assessment (EIA), although drilling has not occurred. Site-specific sensitivities would be considered as part of drilling plans in the area. Species at risk surveys have been sporadic.	These areas have in fact been zoned under the District Development Plan and Zoning Bylaw as ES1 in most cases. Any proposed development in and around these areas has been subject to the normal routine environmental assessment screening process. Some surveys of endangered, invasive and rare and threatened species has occurred as part of the EPP process.

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
	No special guidelines established. Not necessary	
Obj: To protect representative examples of the Great Sand Hills grasslands ecosystem and the processes that are required to sustain them.	Prime Protection Areas were established and are presumed to meet this objective. Crown Reserves have been created by Saskatchewan. More work may be necessary. If PPAs are presumed to meet this objective. Crown Reserves have been created by Sask Industry and Resources These areas have not been zoned or otherwise formally designated. Species at risk surveys have been sporadic. Should 'recognize' instead of protect	PPA's were established by the Strategy. These areas were seen as a compromise to the establishment of larger representative areas under the Parks Act. This Objective was open ended as it was thought at the time it would encourage further discussion of more suitable processes to protect the grasslands ecosystem.
Obj: To protect representative examples of the heritage resources of the Great Sand Hills.	Through the Heritage Property Act, heritage property is protected. Heritage sites protected as identified, typically as part of development application reviews like an Environmental Protection Plan Environmental Protection Plans identify and protect heritage resources SAFRR supports these initiatives Should 'recognize' instead of protect	Clear reference to this was made in the Development Plan and Zoning Bylaws of 1994 and 1998 specifically referring to Heritage Resources in the Policy sections. EPP's must address Heritage Resources and in fact as development has been proposed and conducted in the GSH area more specific Heritage Resource information has been compiled.
Obj: To provide areas for wilderness recreation.	Appears to have been local consensus to not encourage lots of wilderness experience (problems associated with people and cows) Not necessary	Wilderness recreation has been accommodated through the GSH Strategy, Development Plan and Zoning Bylaw. Low impact activity has always been recommended by all parties and was further reinforced in the Tourism Feasibility Study conducted in 1995.
Obj: To provide benchmark areas to monitor the effects of management practices on adjacent areas.	The Prime Protection Areas meet this objective in part, in relation to gas developments. Benchmark areas have been established along the pipeline corridor and the Millie C. Pasture. More work may be needed, as the PPAs do not limit other uses. PPSs meet this objective in part, but not in relation to grazing or land used other than gas. This is essential if we are to understand human impacts in the GSH.	This was in fact the main reason behind establishing the PPA's; however, formalized monitoring has not occurred; rather management of these areas has primarily rested with the agricultural lessees. The Community Pastures Program has undertaken more hands on monitoring and range management initiatives to ensure these areas maintain ecological integrity. This is an area which needs to be better addressed in the review. SAFRR is committed to ongoing monitoring of Range Health and have a program in place,

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
	New areas protected as being more representative of the GSH could also serve this purpose.	again however, limited resources do not allow for a comprehensive and highly accurate assessment of ecosystem health. The Pastures Program of Lands Branch, SAFRR is undergoing a Pasture Management Plan for the Millie Pasture. Also SAFRR is looking at developing more environmentally sustainable land management
3.2 Grazing Management		
Rec: 1. The grazing resource needs to be maintained. This will require: a) standardizing the grazing assessment system; b) providing on-site pasture demonstrations, improving fencing practices and implementation of better grazing practices; c) providing training to grazing managers on new technologies and ideas on range use and cattle management; d) providing programs that maintain species diversity and the sand hills grassland ecosystem while maintaining the grazing resource; and e) providing programs that improve fence line development and water facility improvement.	These objectives have largely been completed with the Saskatchewan Research Council (SRC) Assessment Procedure for Saskatchewan Rangeland; which is used by SAFRR Lands Branch. (b) Various on site pasture demonstrations have been undertaken as part of the SAFRR commitment to improving our rangelands. These include the NPGTP, PGTP and the commitment of grazing resources within the department. (c) Began to provide fieldwork shops on diverse range management topics. (d) SAFRR continues provide training in range management in conjunction with partners like Ducks Unlimited, SSGA, PCAP, SWCC, NCC and SOS. (e) No dollar oriented incentive programs have been developed at this point in time to support fence and water development Current ranching practice involves ongoing changes in management to maintain quality pasture and grazing methods	As stated under comments, various initiatives have been undertaken to address these recommendations. It should be noted a lot of the recommendations impact all grazing activities in all areas of the province. This review could address the need to provide funding and resources to the appropriate agencies to continue the range management objective.
Rec: 2. Range management practices need to be improved for livestock and wildlife. This should be coordinated with other uses.	See recommendation . of 3.2 Grazing Management A considerable investment has been made by government and its various partners to raise awareness about grazing and grazing management. Much of this work is complete	SEE ABOVE
Rec: 3. Research is required to determine the response of native grasses in the Great Sand Hills area to grazing, the season of use and timing of field use.	Much work remains to be done at the species level in terms of moisture requirements and grazing sustainability but monitoring, season of use, carrying capacity have been reasonably established in terms of supporting a commercial cow herd. The study completed in January 1999, by the SRC, titled Ecological Health Monitoring for the Mixed grassland Ecoregion of Saskatchewan has been adopted by SAFRR	Grazing research initiatives were undertaken immediately following the adoption of the Strategy and District Municipal Development Plans and Zoning Bylaws and as referenced in "Comments". The SRC Study referenced

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
	Lands Branch. A program of active monitoring using these techniques has been in place since 1999, and reported annually to the Crown land Stake Holders Committee. Planning commission grazing / wildlife study.	
Rec: 4. More agrologists who are trained in rangeland management with cattle management expertise are needed. Pasture managers also require range use training.	Pasture managers and agrologists have received specific training on range management techniques. These areas are currently well supported within the department.	All agrologists and pasture managers involved have received some specific training in range management, monitoring and assessing range health. SAFRR continues to encourage participation of both Land Agrologists and Pasture Managers in continued workshops and actual field monitoring initiatives. Currently the Pasture Program with the assistance of Range Agrologists from the SAFRR Livestock Branch are preparing Pasture Management Plans for all Community Pastures including the Millie Pasture.
Rec: 5. An expanded role for the community pasture system should be considered so that additional land uses are recognized and legitimized within the community pasture system. This will require: a) developing a vehicle access plan; and b) developing multiple land use objectives.	More work needs to be done in this area. Additional emphasis on rejuvenation of tame forage stand with the objective of further protecting native grass fields remains necessary. Currently the pastures program within Land branch is undertaking pasture range plans for each pasture. The Millie C. Pasture within the GSH has recently developed extensive water distribution system which will enhance range management	The Millie Pasture Management Plan will address some of these opportunities; however, the main focus remains on the land uses of livestock and the petroleum and gas development. In addition, the Pastures Program has recently looked at expanding the role and opportunities for new and compatible land uses which may contribute to growing the livestock industry and creating economic opportunities on all Community Pastures. To date a vehicle access plan has not being adopted and remains a priority for all users within the Community Pastures
Rec: 6. Lease agreements on Crown land need to reflect producer concerns and proper range management. Therefore, it is recommended that: a) adjustments to rental rates only proceed after careful analysis; b) any new rental formula discourage mismanagement of the range; c) lease rental adjustments parallel livestock market conditions; d) a formal appeal process be	All of these recommendations have been implemented and monitored by the Crown Land Stake Holders Forum. Mechanisms are in place with SAMA to address carrying capacity issues. In general mediation processes are provided by policy and at the operational level of the branch.	This is ongoing as stated in the "Comments" section. Continued review of rent formulas, stocking rates, applicability of drought programs RIP/RAP "Range Assistance Program SAFRR Lands Branch is committed through the CLSF process to insure consultation is done prior to implementation of any new rent or fee structures.

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
developed to allow due consideration for concerns on rental charges or land use conflicts; and e) ongoing range evaluation be conducted to ensure protection of natural resources.		
Obj: To manage the range to ensure the long-term viability of the native prairie.	There is long term commitment by SAFRR in partnership with our lessees to work together to ensure the long term viability of the native grass sand hill complex by continuing to provide long term leasing, habitat protection of critical and sensitive areas, the identification of emerging grassland issues and the creation of a favourable regulatory regime.	SEE COMMENTS SECTION
Obj: To enhance the economic viability of farms and ranches.	SAFRR attempts to ensure that a long term and economic sustainable resource is present now and into the future through participation in national, international agricultural issues. This is an on going commitment of Saskatchewan	SEE COMMENTS SECTION
Obj: To ensure that livestock production is compatible with other land use objectives including: petroleum and gas development, wildlife management and recreation.	SIR have provided monetary funding to and have a staff member who sits on the Board of Directors of the Western Interprovincial Scientific Studies Association which is currently conducting a multi-million dollar study on animal health in oil & gas producing areas. SAFRR ensures that discussion with all land users and the various government departments are undertaken with the objective to ensure the greatest compatibility in land use, integration of use, and open consultations is done. Mechanisms to achieve this include the stakeholder forum, land use committees, partnership agreement s with groups, the Great Sand Hill Planning Commission, SPIGEC, SSGA and others. Leaseholder payment of $100/well should be increased to provide adequate compensation	SAFRR ensures that discussion with all land users and the various government departments are undertaken with the objective to ensure the greatest compatibility in land use, integration of use, and open consultations is done. Mechanisms to achieve this include the stakeholder forum, land use committees, partnership agreement s with groups, the Great Sand Hill Planning Commission, SPIGEC, SSGA and others. SAFRR continues to review compensation to our lessees and this discussion is ongoing with the CLSF.
Obj: To develop range management education programs for community pasture managers, patrons and grazing leaseholders.	Pasture managers and agrologists have received specific training on range management techniques. Same recommendation as in # "4" above	SEE RECOMMENDATION # "4"
Obj: To establish community pastures as centres of excellence in sustainable range management, grass	SAFRR continues to work on these objectives and are presently developing an environmental strategy for pastures	SAFRR continues to work on these objectives and are presently developing pasture plans for each pasture and an overall environmental strategy for all Community Pastures.

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
management, ecological stability and biological diversity.		
3.3 Oil and Gas Exploration and Development		
Rec: 1. All proponents should submit plans for any exploration or development in the Great Sand Hills to Environment and Public Safety.	Standard practice. Note: there is no moratorium associated with this review : There is no Appendix C included with this evaluation Both of these references are attributed to the original Land Use Strategy document	This is outlined under provincial legislation and SE through the Environmental Assessment Act has screening mechanisms in place e.g. EPP's SE, SIR and SAFRR use the "Harmonized Process" to review gas development proposals
a) A detailed project proposal (EPP) will be required for any proposed seismic exploration or exploratory drilling in the moratorium area. The moratorium area is defined in Appendix C. Environment and Public Safety reserves the right to require a full Environmental Impact Assessment (EIA) for any exploration program if it is of sufficient scale, is in a sensitive area or otherwise satisfies any of the criteria in The Environmental Assessment Act.	Standard practice. GSH identified as mandatory EPP area, with EIA requirement determined on project-specific basis. The recommended practice in terms of approval of entire project areas with follow-up site-specific details provided later has been followed. There has only been 1 new EIA initiated and completed in the GSH since the plan was adopted, and little new drilling in ES1 areas. All projects must be presented to RM and Planning Commission as part of RM Development Approval process. Public meetings not always required for small projects. There has been a relative lack of development in the GSH, particularly ES1 areas, since RM bylaws were passed.	The GSHPDC and participating municipalities are consulted through the Environmental Assessment Process. **SE ENVIRONMENTAL ASSESSMENT PROCESS ADDRESSES THIS.**
b) An environmental impact assessment will be required for any proposed gas production program in the moratorium area. Development of all mineral holdings of that proponent in that area of the sand hills is to be addressed in the EIA. However, only the developments proposed, for the initial 2 years must be addressed in site-specific detail. Future development details would require subsequent approval, and would be reviewed prior to actual	This is in place as a requirement. Not only do they submit to SE but also to the respective municipalities and in turn the Sand Hills Commission SAFRR reviews and participates in all EPPs.	

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
development occurring. This is assuming that the overall development received initial Ministerial Approval. No production development in this area will be permitted without the proponent first having received Ministerial Approval pursuant to The Environmental Assessment Act for the complete development area. Completion of an exploration program will not guarantee that Ministerial Approval will be granted for production development, nor will assurance be given that all site-specific development plans will be approved even if the overall project has received Ministerial Approval. c) All exploration and development proposals in the Great Sand Hills outside the moratorium area will be subject to prior review of a project proposal by Environment and Public Safety. Any proposal which satisfies any of the criteria in The Environmental Assessment Act will be required to undergo an EIA and to obtain Ministerial Approval to proceed. An Environmental Plan will be required for any project not requiring an EIA. d) All plans for exploration and development in any part of the Great Sand Hills must be presented by the proponent to the appropriate Rural Municipality and to a public meeting		

Goal/ Objectives/ Recommendations (as found in the original strategy)	**Comments**	**Analysis**
or similar forum in the project area. These presentations must occur prior to the presentation of a project proposal or similar documentation to Environment and Public Safety for environmental screening. The Department retains the right to waive the public meeting requirement for small-scale exploration projects in less environmentally sensitive areas.		
Rec: 2. Well sites, flow-lines and access routes should be carefully sited to avoid areas with high erosion potential.	Standard practice. All well sites, flowlines and access routes must be identified and approved as part of EPP process The harmonized review process provides SAFRR an opportunity to participate in all review and on site issues. Local zoning also takes these developments away from areas with high erosion potential. Municipal Council have taken a more active role in well site etc. selection, keeping in mind use of existing trails and environmental concerns of the occupants and public at large. Implementing site specific rezoning in areas	This issue is well in hand and demonstrates the positive working relationships developed with gas industry, Planning Commission and provincial government agencies
Rec: 3. Drilling fluids should be contained in mud tanks used in association with a small transfer pit. Lined mud pits are not acceptable as they unnecessarily disturb stabilized soils and thereby increase the risk of erosion.	Standard practice. Check with SIR in relation to use of transfer pit. It is a condition of all SAFRR surface lease agreements that mud tanks be utilized while drilling main hole, a small pit is allowed for cement returns and native cuttings while drilling surface hole. No pits are permitted in GSH complex.	SIR has introduced and implemented new regulations to deal with drilling fluids
Rec: 4. Drilling fluids and drilling fracture fluids should be disposed of in accordance with Energy and Mines guidelines. Certain waste drilling fluids may be disposed on lease, on access trails and on pipeline rights- of-way, so long as this is done in accordance with these guidelines. This practice is currently limited to	Standard practice exceeds this recommendation All drilling fluids and Frac Fluids must be disposed of according to SIR guidelines. SIR introduced Saskatchewan Upstream Drilling Waste Management Guidelines GL99-01in 1999. They introduced their Frac Fluids and Solids Waste Management Guidelines GL2000-01, in 2000. These are regulatory guidelines and strictly prohibit the use of mud pits in hydro-geologically-unacceptable areas. In addition all well licences are individually reviewed for site-specific hydrological and biophysical sensitivity factors and if needed the	Addressed in new SIR regulatory Guidelines. Standards are now considerably more

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
gypsum and ammonium sulphate-based fluids. Potassium chloride based fluids may not be disposed on lease and must be either deep well-injected or disposed of in previously approved surface facilities.	requirement for mud tanks is specifically indicated on the well licence. Finally a condition is automatically attached to all well licences issued within the Great Sand Hills or other sensitive areas, that requires the mandatory use of mud tanks while drilling. Standard practice exceeds this recommendation. All drilling wastes removed from the area.	
Rec: 5. Water co-produced with natural gas should be flow-lined to central facilities for handling and disposal when technically feasible. Detailed water-management plans should be presented in the EPP or EIA.	Standard practice. Additional produced fluid injection facilities have been constructed in the general area (Sand Hills Disposal). Also, a state of the art total waste management facility, (licensed by both SIR and Saskatchewan Environment to handle all upstream waste fluids, sludge and solids) is located near Gull Lake	All positive environmental changes since initial strategy. Detailed water management (use) plans are provided.
Rec: 6. Flowlines should be installed in a manner which reduces surface disturbance (e.g., plowed in rather than trenched, wherever possible).	Standard practice. Trail and flow line routes determined based on lowest-impact result, but typically are on same or existing rights of way. SE has review processes in place where site specific minimal disturbance conditions can be specified as a part of the operator's EPP requirements Operators must obtain landowner and municipal consent regarding flow line routes in the sand hills. The landowner is most often SAFRR. SAFRR and SE work closely through a formal harmonized environmental review process to ensure all environmental enhancement needs are mitigated. SE recommends site-specific environmental conditions and SAFRR includes these conditions in their Surface Lease Agreement. Today, ploughed in flow lines is normal practice. Municipal permit requires that flow lines be ploughed when conditions are favourable in the late fall of the year with specialized equipment as well that operation have a monitor on sight as all times.	As mentioned, the use of the ploughed in methodology has become standard practise over the past years and has proven to contribute to less disturbance and quicker recovery of native vegetation. It also has resulted in the reduced use of replacement seed mixes, which have in the past resulted in the introduction of invasive species. It should be noted that ploughing in lines is not always possible due to soil structures and the diameter and composition of the line/pipe being buried. SEE COMMENTS FOR MORE POINTS
Rec: 7. Access and pipeline rights-of-way should follow the existing trail	Standard practice. As above.	Adopted as standard practise for all lineal developments.

Goal/ Objectives/ Recommendations (as found in the original strategy)	**Comments**	**Analysis**
network whenever possible, and should use a common right-of-way. New rights-of-way should be used only where existing routes are not available and where use of existing trails would increase overall environmental impact.	Standard practice. Trail and flow line routes determined based on lowest-impact result, but typically are on same or existing ROW. As above. The above review establishes a big picture with respect to the overall environmental impact caused by upstream gas industry activity in the area. The conditions specified in the above mentioned processes account for cumulative effects and adjust for the efficient use of existing infrastructure. Today this is standard environmental practice	The Planning Commission, affected departments and Industry have attempted several initiatives to develop a trail management plan for the area. To date no formal plan has been developed, however, a recent initiative by The Trails Reclamation Committee a subcommittee of the Great Sand Hills Planning District Commission, which is co-chaired by Industry (Burlington Resources) and SAFRR.
Rec: 8. Development activities should minimize habitat loss and avoid areas of key wildlife habitat for priority species during high-sensitivity periods. Examples of sensitive species and areas include: raptor nesting sites, burrowing owl burrows, piping plover nesting areas, critical winter habitat for ungulates and sharp-tailed grouse dancing grounds. All development sites should be surveyed for rare and endangered species of flora and fauna. The results of these surveys should be included in the EPP and EIA.	Standard practice. Standard practice. All development locations surveyed for R&E spp. Development plans based on selecting minimum impact locations and follow low-impact procedures. SE guidelines limit project related activity within buffer distances during sensitive periods (typically nesting season). All operators are required to submit an EPP to SE's Environmental Assessment Branch prior to proceeding with any upstream development on crown and / or private lands that has any type of ecologically sensitive or valuable features. SE has processes in place where site specific minimal disturbance conditions or restricted access periods can be specified as a part of the operator's EPP requirements and approvals. EPP and harmonized process currently supports these issues.	Adopted as standard practise under EPP and through involvement of Grassland Ecoregion Wildlife Biologist. This is also accepted practise under "Harmonized gas Process".
Rec: 9. Developers should provide an environmental monitor(s) on-site, full-time during all exploration and development activities to ensure that all environmental protection measures in the impact assessment or protection plan are implemented Monitors should also assist the developer in anticipating and avoiding unforeseen environmental	Monitor(s) requirement is standard practice. Monitors have ability to halt development if unacceptable impacts would otherwise result. This work has been completed. Further, there have been guidelines drafted to determine the qualifications required of Environmental Monitors. SAFRR in conjunction with SPIGEC recently produced a guideline detailing the terms of reference for environmental monitors (EM).	Guidelines for Environmental Monitors have been developed through SPIGEC and the use of EM's has been outlined in more detail in the Harmonized gas Process SE/SAFRR/SIR. SEE COMMENTS FOR MORE DETAILS

Goal/ Objectives/ Recommendations (as found in the original strategy)	**Comments**	**Analysis**
impacts. The monitor should have the developer's written authority to halt exploration or development when in the monitor's professional opinion, unacceptable environmental damage could be done by the ongoing activity. Environment and Public Safety should have the right to approve project monitors.	Through the harmonized process and our lease conditions and seismic requirements we authorize the use of EM's	
Rec: 10. All development sites should undergo heritage resource screening to determine archaeological sensitivity (see Section 3.6).	All development is subject to screening by Heritage Resources. Field evaluations are required when HR determines there is potential for heritage resources in that area. Required as part of Environmental protection plans.	Process is in place. Heritage Resources administers.
Rec: 11. All disturbed areas should be stabilized and reclaimed using procedures and to the standards indicated in this plan (see Section 3.9).	Standard practice. Typically little stabilization is required due to efforts to plan and implement minimum impact project. SAFRR provides a set of guidelines entitled Restoration of Saskatchewan's Agricultural Crown rangelands covering these needs. As well, the EPP may list additional site specific requirements. The process is not complete all areas are not reclaimed	Now standard practise. **SAFRR RESTORATION GUIDELINES EXIST**
Rec: 12. All new gas development activities (aside from limited scale exploration or similar undertakings) in the Great Sand Hills should require posting of a bond or similar instrument with the Government of Saskatchewan. The amount of the bond or equivalent guarantee should be adequate to ensure effective reclamation of disturbed locations.	Development projects that undergo EIAs have all been subject to a requirement to post a bond as a condition of Ministerial Approval under EA Act. To date there has been no need to access any of these funds. The current "Environmental Fund" and the proposed "Orphan Well and Facility Program" administered by SIR and to be funded by industry will adequately address this issue. The process is in place; there is some question as to the adequacy of the funds.	**New Orphan Well and Facility Program (SIR)** will assist in addressing this issue along with the EA Act provisions. Concern still remains that adequate levels of money guarantees are is not in place.

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
Rec: 13. Gas developers and Rural Municipalities should cooperate in preparing fire prevention and control plans. These plans are to be presented in EPPs and/or EIAs.	RMs and industry work well together on proposed development plans. Opportunities are made available. Typically not presented in EPPs (no value in doing that). They are best developed directly between RM & proponent, and it is believed that this occurs in advance of drilling projects. This is being addressed in present development proposals in the Great Sandhills. Municipality has improved their fire prevention equipment. A development condition is that the developer have fire prevention equipment in close proximity to the GSH at all times during the year.	Addressed in all proposals for activity.
Rec: 14. Environment and Public Safety, Energy and Mines, Rural Development and other government departments as may be appropriate should inspect development sites at least annually to ensure that procedures and standards established in this strategy and in environmental protection plans and Environmental Impact Statements (EIS) are being followed or achieved. These inspections should continue until site reclamation has been completed satisfactorily. There is a need for more environmental inspectors with training in reclamation technology to undertake these inspections.	Routine inspection of development sites does not occur. In EIA areas, companies submit annual and 5-year status / reclamation plans. Once stabilized and revegetated, little benefit from routine annual inspections of leases. SIR personnel on a regular basis inspect all sites. Current policy is a minimum of once per year although some sites are inspected more than others. Abandoned sites are inspected to ensure SIR's requirements have been met. Once our conditions have been met additional inspections are left to other agencies. SIR considers all sites as active until such time as the respective landowner provides a surface release to an operator who in turn must provide SIR with a copy of it. SAFRR supports these requirements.	Government resources are dedicated to this, however due to personnel resource limitations both SIR and SAFRR cannot realistically keep up with all development activity as well as they would like to, and not always to the perceived level of the public, industry and environmental groups.
Rec: 15. Developers should be encouraged to provide educational opportunities relative to their activities and the means by which environmental protection is accomplished. Such programs should include site visits in response to requests by environmental interest	Developers are encouraged Environmental groups should be listed last in precedence	In fact many of the recent gas development proponents have been very active in helping to educate all interested parties in their activities and have conducted numerous public open houses and regularly attend Commission and R.M. meetings to outline their planned activity.

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
groups, local government officials and land owners/occupants.		
Rec: 16. Oil and natural gas mineral rights currently held by the Crown in the moratorium area, and any oil and gas rights which subsequently may revert to the Crown in this area, should not be offered for sale by Energy and Mines for a period of at least three years. Environment and Public Safety, Energy and Mines, and other government agencies will use experience with development in the moratorium area to determine if land withheld from sale should be made available in the future for development.	This was done. Presently SIR will not post lands for lease unless assurance is given that operators will have surface access to the lands.	SEE COMMENTS SECTION
Obj: To ensure the hydrocarbon resources in the development zones of the Great Sand Hills area are delineated and evaluated in a thorough manner.	Access problems exist additional work is required	STILL NEEDS TO BE ADDRESSED. QUESTION REMAINS AS TO WHOSE RESPONSIBILITY IT IS!!!
Obj: To ensure the hydrocarbon resources are developed and produced such that the maximum economic value is obtained.	Access problems exist additional work is required	THIS IS STILL THE BIG QUESTION AND HAS RESULTED IN THE CURRENT REVIEW. WE DO NOT HAVE A MECHANISM IN PLACE TO PRIORIZE LAND USES AND THE QUESTION IS AS TO WHAT LEVEL AND AT WHAT IMPACT TO THE ENVIRONMENT
Obj: To ensure the hydrocarbon reserves are recovered with minimum disturbance to the biological, physical and cultural resources of the area.	Standard practice through EPP / EIA ad RM procedures. Environmental protection plans and / or Environmental Impact Assessments pertaining to development are required.	SEE ABOVE! THE CURRENT PRACTISE AND PROCESSES IN PLACE ATTEMPT TO DO THIS. WE HAVE SEVERAL GOOD EXAMPLES OF HOW THIS HAS WORKED TO DATE. MORE NEEDS TO BE DONE TO DEVELOP BETTER DEVELOPMENT TOOLS AND ANALYSIS
3.4 Wildlife Management		
Rec: 1. Formal consultations are required between Crown land lessees in the Great Sand Hills and officials	Much of the GSH are designated under WHPA Does this apply to TLE? Consultation process seriously flawed	Most of GSH area is designated under the Wildlife Habitat Protection Act (WHPA). Unfortunately no consultation was done with lessees in 1992

Goal/ Objectives/ Recommendations (as found in the original strategy)	**Comments**	**Analysis**
of the Department of Parks and Renewable Resources, in which lessees are to be given an opportunity on a voluntary and informed basis to provide consent to parcels of land being designated Critical Wildlife Habitat.		when the area was designated.
Rec: 2. Wildlife and livestock managers should improve their working relationships to more closely manage range resources for both livestock and wildlife.	A study of deer-cattle feeding interactions in the GSH was completed by the Science Research Council. The Saskatchewan Stock Growers Association, in conjunction with SE and others, spearheaded the new Prairie Conservation Action Plan. The Grazing and Pasture Technology program included consideration for maintaining the biological diversity of native prairie. This kind of collaboration needs to continue. Planning Commission wildlife / cattle interaction study. The deer cattle study was completed in 1995 to address wildlife and cattle issues. Needs to be more work between departments to ensure when producers are reducing livestock because of drought – wildlife management must follow	A study of deer-cattle feeding interactions in the GSH was completed by the Science Research Council. The Saskatchewan Stock Growers Association, in conjunction with SE and others, spearheaded the new Prairie Conservation Action Plan, which was recently renewed in 2003. The Grazing and Pasture Technology program included consideration for maintaining the biological diversity of native prairie. More specific work needs to continue in this subject area.
Rec: 3. Hunting should be maintained in all areas of the Great Sand Hills as it is a sustainable use of the resource and an important wildlife management tool.	Hunting is allowed in GSH area. There is potential to increase hunter access to area. Hunter access could be enhanced through the addition of archery seasons without harming the deer herds. The antelope herd continues to increase and may permit limited harvests to begin again. Hunting is maintained so as to control the wildlife numbers. Should read must	Hunting was recommended in the Strategy and subsequently included in the District Development Plans and Zoning Bylaw.
Rec: 4. Development should proceed with minimization of habitat loss and disturbance to wildlife, and without sacrificing habitat quality, including water quality.	Managers recognize that development occurs based on best information available. Standards or guidelines will change with new information. Further development must occur within an ecosystem framework, in which landscape considerations are given stronger emphasis.	In general, gas developments in the GSH to date have tried to meet this recommendation. The need to have cumulative assessments of all impacts is still paramount and is viewed by many as a benchmark that must be done prior to going ahead with more development of any kind.

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
	Timing and other constraints placed on dev / operation of projects. In general, gas developments in the GSH to date have not met this recommendation. The main problem seems to be the project-by-project way in which activities are assessed resulting in no consideration for cumulative impacts or larger ecosystem planning. While single projects may be relatively benign, the lack of coordination between them means that their combined impacts are considerable, particularly from the standpoint of access trails. Any further development of the GSH for gas must occur within an ecosystem framework, in which landscape considerations are given stronger emphasis. Problems have also occurred with the use of non-native plants or corrupted seed mixes for restoration purposes; all future restoration efforts must preclude the deliberate or accidental introduction of these species. Very few natural water resources are found in great sand hills, most water sources in great sand hills have been developed by land owners and lessees	The project-by-project way in which activities are currently assessed results in no consideration for cumulative impacts or larger ecosystem planning. Any further development of the GSH must occur within an ecosystem framework, in which landscape considerations are given stronger emphasis. Problems have also occurred with the use of non-native plants or corrupted seed mixes for restoration purposes The concept of minimal disturbance and such activities as ploughing in lines has helped minimize these concerns however has not eliminated this realistic threat to ecosystem integrity.
Rec: 5. Prior to major development in the Great Sand Hills, the following should be identified: critical deer and antelope wintering/fawning areas, sharp-tailed grouse dancing grounds and associated nesting cover, and nesting/denning areas of rare and endangered species. Where identified, additional restrictions or prohibitions may be -required. These areas could be classified as Special Use areas.	Although the EPP/EIA/bylaw processes and procedures are assessing individual projects, there are concerns that there is not a good understanding of the effects of development overall. No areas were designated Special Use based on identification of wildlife habitat under this recommendation. Identified as part of project planning and documented in EPP / EIA, together with mitigative measures to avoid / minimize any conflicts that may be identified. Timing and buffer setbacks placed on activity during nesting period to avoid disturbance. This is covered off by the requirement for Environmental Impact Assessments and /or Environmental Protection Plans In general, gas developments in the GSH to date have not met this recommendation. The main problem seems to be the project-by-project way in which activities are assessed resulting in no	Species at Risk Legislation is now a reality and must be accommodated and addressed in any proposed development activity. It also impacts existing activities. Individual. The Conservation Data Centre assists in providing this essential information to all those planning developments and activity. EPP's must address these requirements The Strategy did address this in recommending Special Use Areas And the resultant Development Plans and Zoning Bylaws incorporated some of these provisions.

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
	consideration for cumulative impacts or larger ecosystem planning. While single projects may be relatively benign, the lack of coordination between them means that their combined impacts are considerable, particularly from the standpoint of access trails. Any further development of the GSH for gas must occur within an ecosystem framework, in which landscape considerations are given stronger emphasis. Problems have also occurred with the use of non-native plants or corrupted seed mixes for restoration purposes; all future restoration efforts must preclude the deliberate or accidental introduction of these species. Again, while some important wildlife areas and species at risk sites are identified, they are done so on a project-by-project basis without consideration for cumulative impacts. Such information is often out-of-date and not verified by field visits.	
Rec: 6. Road and trail development must be carefully planned to minimize impacts on the natural resources of the Great Sand Hills. (See Recommendation 7, Section 3.3.)	Trail locations based on minimum impact. Low grade trails used and measures adopted to minimize traffic. Trail maintenance as low impact as possible (e.g., selective gravel placement in ruts.) Existing trails used wherever possible. No new graded roads. Although the EPP/EIA/bylaw processes and procedures are assessing individual projects, there are concerns that there is not a good understanding of the overall effects of development. All access roads and use of trails must be approved and identified in corresponding Environmental Protection Plans. In general, gas developments in the GSH to date have not met this recommendation. The main problem seems to be the project-by-project way in which activities are assessed resulting in no consideration for cumulative impacts or larger ecosystem planning. While single projects may be relatively benign, the lack of coordination between them means that their combined impacts are considerable, particularly from the standpoint of access trails. Any further development of the GSH for gas must occur within an ecosystem framework, in which landscape considerations are given stronger emphasis. Problems have also occurred with the use of non-native plants or corrupted seed mixes for restoration purposes; all future restoration efforts must preclude the deliberate or accidental introduction of these species. Lack of coordination has resulted in too	NEED AN OVERALL TRAIL/ACCESS MANAGEMENT PLAN FOR THE GSH AREA!

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
	many access trails being built in the GSH. Existing trails are used wherever possible. We don't know how extensive the impacts are. This needs to be studied more to learn the effects on plants and wildlife. Good effort to date, additional gravel placement required with ongoing gravel placement in ruts	
Rec: 7. Additional research is necessary to more fully understand ecological conditions and relationships in the Great Sand Hills, and to predict the impact of land uses. Information should be stored in a central data system to allow access to users.	Invasive plant study (SE). Commissions cattle / deer interaction study. Project specific wildlife and R&E surveys. Only a handful of ecological studies have been conducted to date. Benchmark areas have not been established to predict and monitor the impacts of human activities. These need to be selected and designated.	Invasive Species Study done summer 2002. Need to do more, along with the need to have cumulative and centralized data access to all users.
Rec: 8. The potential of the Great Sand Hills to support additional non-consumptive wilderness and wildlife based recreation should be examined.	The Commission undertook a GSH Tourism Development and Feasibility Study (1996). Findings of the study were incorporated into the development plan. Non-consumptive use of the GSH remains sporadic and unorganized. Its potential for ecotourism needs to be further evaluated. SAFRR supports policy of increasing opportunities on crown land. Non-consumptive use of the GSH remains sporadic and unorganized. Its potential for ecotourism needs to be more properly evaluated.	GSH Tourism Development and Feasibility Study (1996) outlined opportunities. These were accommodated in the subsequent Development Plan and Zoning Bylaws
Rec: 9. During periods of extreme fire hazards, in consultation with affected Rural Municipalities, Parks and Renewable Resources should determine the need to close or restrict hunting and other recreational activities.	The GSH were closed to hunting in 2001 at the request of the local ranchers. This action could be taken again as conditions warrant.	This is monitored by SE now.
Obj: To maintain the biological diversity of the Great Sand Hills.	Saskatchewan Biodiversity Action Plan (2002), a new initiative, will support this objective. Follow-up on the effects of projects is limited.	Analysis of the Saskatchewan Biodiversity Action plan will need to be done in order to assure that the biodiversity and ecological integrity of this area is accomplished and the "Actions " listed in the Biodiversity Plan are followed.

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
	A major consideration in project planning, No follow up of effects of projects on ecosystem integrity. The biodiversity of the GSH is largely still intact. However, the research conducted in 2002 indicates that the area is particularly sensitive to invasion by non-native plants. The GSH need to be protected from this serious threat by improved policy, regulation, management and monitoring	This is a major concern expressed by the environmentally concerned sector and will need to be addressed in the current review as broader mechanisms will have to be considered..
Obj: To provide quality recreational opportunities such as hunting, bird watching and other wildlife based activities.	The Commission undertook a GSH Tourism Development and Feasibility Study (1996). Findings of the study were incorporated into the development plan. Non-consumptive use of the GSH remains sporadic and unorganized. Its potential for ecotourism needs to be further evaluated. See above recommendations.	Tourism Feasibility Study identified this and was incorporated into the Development Plan, however to date this opportunity has not been developed in a concerted fashion..
Obj: To ensure that the use of wildlife resources is sustainable.	Provincial department responsible for wildlife resources continues to manage for sustainability. Hunting quotas based on productivity. See above recommendations.	SE monitors this and responds accordingly.
3.5 Tourism		
Rec: 1.An advisory group should be formed to prepare a Tourism Development Plan. This group should be comprised of local citizens, interest groups and relevant government agencies.	The Commission undertook a GSH Tourism Development and Feasibility Study (1996). Findings of the study were incorporated into the development plan.	SEE COMMENTS SECTION
Rec: 2. The development plan should be completed prior to any facility development, tourism promotion or highway signage improvements.	The develop plan referenced here refers to GSH Tourism Development and Feasibility Study (1996). Findings of the study were incorporated into the development plan. GSH Commission had study completed re: tourism development.	Incorporated in Development Plan and Zoning Bylaws.
Rec: 3. Tourism development in the Great Sand Hills should only proceed	GSH Tourism Development and Feasibility Study (1996)	GSH Tourism Development and Feasibility Study (1996) outlines this!

Goal/ Objectives/ Recommendations (as found in the original strategy)	**Comments**	**Analysis**
when resources can be adequately protected, and when development is compatible with local life styles.		
Rec: 4. Non-consumptive use of the Great Sand Hills such as bird watching, hiking and heritage awareness programs should be emphasized.	GSH Tourism Development and Feasibility Study (1996) None of these activities have ever been really emphasized. GSH Commission proposes to have "interpretative signage" place at visitor site on Straw Trail, thus may reduce impact of area by visitors.	Some of the initiatives as identified in Tourism Plan and Comments Section require further action.
Rec: 5. Hunting should be maintained in the Great Sand Hills as an economic and recreational activity and to serve as a wildlife management tool.	Hunting remains an accepted activity Hunting maintained Hunting is needed as a management tool to control the wildlife numbers. Hunting necessary in GSH to reduce depredation on surrounding areas. Deer/Cattle study of GSH Commission noted very limited completion. Should read must	Permitted through SE policies and accommodated in Development Plan and Zoning Bylaws.
Rec: 6. Except for the possible development of day-use facilities in the Straw Road Area, tourism facility development should occur outside the Great Sand Hills.	No tourism facilities developed in GSH area (exception: Straw Road area has a sign and parking area). No facilities in GSH o/s Straw Road. There is an interpretive center in the Sceptre Museum on the Great Sandhills. Parking area developed next to Straw Trail for day-use. Tourist encouraged to visit Sceptre Museum for additional experiences.	SEE COMMENTS SECTION
Rec: 7. Representative and unique landscapes of the Great Sand Hills should be protected through appropriate land use mechanisms such as zoning.	Although the Prime Protection Areas established under the 1991 Strategy are examples of unique and representative landscapes, it is recognised that there may be other areas that need to be identified and protected. Zoning and PPA selection not based on ecological evaluation ? Has anything officially been done to identify additional areas?	Achieved under zoning designation. Question has been is this sufficient?

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
	All areas of the Sandhills have a zoning bylaw in effect. Due to varying topography zoning is difficult. Should 'recognized' instead of protected	
Obj: To promote sustainable tourism of the Great Sand Hills without significantly impacting biological, physical and heritage resources or other existing land uses.	Sustainable tourism is promoted. The Straw Road Area has been established as a day use facility. There is a parking area for tourists. There is a short hiking trail to get to the main dune, however vehicle access farther than the parking lot has been closed off to prevent traffic accessing in behind the dunes. This protects the biological, physical and heritage resources or other existing land uses. Interpretive signage has to be completed in the future so information about the area is available at the tourist site.	SEE REFERENCE TO TOURISM FEASIBILITY STUDY
Obj: To protect both representative and unique landscapes.	Although the Prime Protection Areas established under the 1991 Strategy are examples of unique and representative landscapes, it is recognised that there may be other areas that need to be identified and protected. Unique landscapes protected through PPAs. Should 'recognize' instead of protect Don't see need for additional areas identified	Achieved under zoning designation. Question has been is this sufficient??
3.6 Archaeological Resources		
Rec: 1. Developers should refer all land use and development proposals for the Great Sand Hills to Heritage Branch for review as early in the development-planning process as possible.	Standard practice This is being done. Many items have been discovered since Environmental Protection Plans became mandatory.	Heritage Resources does this now. A database has been developed. EPP's have provided a lot of this valuable information.
Rec: 2. The existing procedure whereby Heritage Branch participates in project screening and reviews under the Environmental Impact Assessment process coordinated by SEPS should be continued.	Standard practice This has been continued	CURRENT PRACTISE

Goal/ Objectives/ Recommendations (as found in the original strategy)	**Comments**	**Analysis**
Rec: 3. Development activities associated with existing land-uses such as dugout or other local excavation, building or corral construction or new trail development should be referred to Heritage Branch for screening before initiating construction. Where provincial Crown lands are involved, Rural Development should assist lessees with these referrals.		CURRENT PRACTICE
Rec: 4. Promoters or facilitators of any tourism ventures involving public access into the Great Sand Hills should be fully apprised of the regulations concerning artefact collection, excavation or other disturbance of heritage resources. An information package on heritage resources and the legal prohibitions on site disturbance and collection should be made available to hunters and other visitors to the area.	Heritage Property Act regulates heritage property. The Commission Development Plan/Bylaw recognizes the significance of heritage property. Information is available but active pursuit of users may not be happening	Addressed in Development Plans and was also in the provisions of the Tourism Feasibility Study.
Rec: 5. Any tourist trails or other similar facilities should avoid sites of high heritage resource value or potential, except where these sites are part of a formal and carefully controlled interpretative program.	Commission Development Plan acknowledges Straw Trail as tourist site (interpretation)	SEE COMMENTS SECTION
Obj: To protect the archaeological resources of the Great Sand Hills.	Heritage Property Act and RM / Commission bylaws	SEE COMMENTS SECTION
Obj: To ensure study and/or salvage of archaeological resources when protection is not feasible.	This is being done. Heritage Property Act requirement	SEE COMMENTS SECTION
Obj: To encourage public awareness of the archaeological resources of the Great Sand Hills.	There is some activity to encourage public awareness but there not general awareness	NEEDS TO BE ADDRESSED. QUESTION IS BY WHOM?

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
3.7 Groundwater Resources		
Rec: 1. The current system of managing industrial uses of groundwater in the Great Sand Hills should be maintained. The Saskatchewan Water Corporation should review all proposed industrial uses of groundwater to reduce potential conflicts between all water users, including wildlife.	Standard practice. This is being done.	STANDARD PRACTICE
Rec: 2. Water quality should be sampled by gas developers in all dugouts and water wells within 250 meters of all gas wells and within 1000 meters of all brine disposal or evaporation facilities prior to initiation of drilling or construction. Environment and Public Safety should require water quality sampling within a larger radius of proposed developments when warranted. Baseline data should be reported in the project proposal or environmental impact statement prepared for the project.	Commission Development Plan /bylaw requirement. Standard practice. No longer any brine disposal or evaporation facilities in the area. Data not normally reported in EIA / EPP, as sampling done closer to development date. Commitments to include info included in EPP / A condition of Municipal Development approval, result document to be filed with the Municipality. More diligence in the matter of providing result documents by developers is necessary. Should be required by Sask Watershed Authority.	SEE COMMENTS HAS BEEN ADDRESSED!
Rec: 3. Drill cuttings and sump fluid solids should be buried on lease only if they are covered by a minimum of two meters of low permeability material and only if the groundwater level is at least two meters below the base of the pit. Ammonium sulphate solids should be dried on surface and mixed with native soil materials prior to burying.	Current practice exceeds recommendation. All materials (except drill cuttings) removed from area. GL99-01 meets and exceeds these requirements. GL99-01 prohibits on-lease burial of any drilling fluids. Please note all drilling wastes generated on ecologically or hydrogeologically sensitive lands are stored in tanks and then disposed of outside the ecologically sensitive area. Note: it is possible to get approval for some materials to be put on road for stability. Normally nothing is allowed to be disposed in GSH / keep it clean.	SEE COMMENTS SECTION. CURRENT PRACTISE
Rec: 4. Water supply and distribution should be used more fully as a range	Consistent with agriculture range practices / remote watering	SAFRR initiated a water distribution project in the Millie Pasture in 2002/2003, which ploughed in several water lines

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
management tool. New wells and dugouts should be part of comprehensive range management and planning undertaken by ranchers in cooperation with range management specialists.	Such water systems with plowed in lines encouraged by the Municipality following Development Permit Application approval. Water distribution should be encouraged	and established a remote watering system, which will ensure long-term water to cattle and reduce trampling damage at traditional dugout and windmill water sites.
Rec: 5. Any water wells or dugouts constructed by the gas industry to supply water for drilling fluid make-up or irrigation should be located in cooperation with the land owner/ occupant. When abandoned, these facilities should be made available to livestock operators.	Standard operating practice Normal practice in all areas of development. TransCanada Pipelines working in co-operation with pasture patrons to develop water supplies and take the concentrated pressure off pipeline crossings.	CURRENT STANDARD OPERATING PRACTICE
Rec: 6. In order to prevent groundwater contamination, direct livestock access to new dugouts should not be allowed and should be phased out as improvements or renovations are made at existing locations. Water should be pumped into tanks near the dugout. Solar powered pumps are recommended as environmentally and aesthetically preferable to conventionally powered pumps.	Maintain awareness for range management initiatives Has been the advice given by the GSHPDC to pasture patrons and has become the policy of PFRA for water development projects.	SAFRR initiated a water distribution project in the Millie Pasture in 2002/2003 which ploughed in several water lines and established a remote watering system which will ensure long term water to cattle and reduce trampling damage at traditional dugout and windmill water sites.
Rec: 7. Limited, short term use should be made of available shallow groundwater for irrigation of wellsites and rights-of-way as part of reclamation efforts, particularly in locations which are difficult to reclaim.	Has been used selectively. Irrigation not necessarily beneficial as it will promote growth of species not able to survive once water withdrawn. Reclamation has been successful with out irrigation. Minimum disturbance reduces need for revegetation. No such practice in this area. Threats of drought looming on the horizon has local land occupants being very conservative with groundwater supplies.	Irrigation not seen as an effective or desirable on native vegetation re-establishment.
Rec: 8. The use of purified, produced water for reclamation of disturbed locations should be encouraged.	Irrigation has not been used as water produced generally isn't sufficient	SEE ABOVE

Goal/ Objectives/ Recommendations (as found in the original strategy)	**Comments**	**Analysis**
	Irrigation has not been used.	
Rec: 9. Industrial water developments (e.g., water wells, pipelines, irrigation projects) in the Great Sand Hills should be subject to the environmental impact assessment process.	Would be subject to environmental review processes.	EIA EPP covers this recommendation
Obj: To preserve the quality of groundwater resources in the Great Sand Hills.	Oil and Gas Industry following guidelines	All users currently recognize the value of this resource.
Obj: To ensure availability of shallow groundwater resources for human domestic use, and use by livestock and wildlife.	Maintaining access to water is the general plan but climate / weather conditions may limit water resource use	SEE ABOVE. More work is needed to address the water quality/ quantity issue.
Obj: To use groundwater as a tool for management of the rangeland resource.	The shallow water table allows for a good distribution of water for enhanced rangeland management. Plough in trenching and solar serviced pumps allow for minimal disturbance of the environment. as per recommendation 6.	SEE RECOMMENDATION #6
3.8 Utility Corridors		
Rec: 1. All proposed corridor projects should undergo environmental screening and review. This recommendation applies to construction, upgrading or expansion to facilities such as: graded roads, pipelines, transmission lines and domestic electricity, telephone or natural gas distribution lines. Non-graded trails used by ranchers for range management purposes should be exempt from this review process.	Standard Practice Any significant linear facility is subject to EA screening (EPP). There have been no major new pipelines or transmission lines in the area since the strategy was implemented. Pipelines have been in association with new gas development (flowlines). TCPL 92/93 looping was constructed in existing corridor. Small scale fibre optic and gas / electrical lines not reviewed thru EPP process but subject to evaluation thru SE regional office. SAFRR recognizes that trails for agricultural use are generally of a low impact however there may be areas where reclamation is recommended. The trail reclamation study project will identify trail issues. The Land Utilization Policy could be used to improve trail management in this area.	STANDARD PRACTICE SAFRR recognizes that trails for agricultural use are generally of a low impact however there may be areas where reclamation is recommended. The Trail Reclamation study project will further identify these trail issues.
Rec: 2. Any future expansion of the TransCanada PipeLine system should be subject to comprehensive	TCPL 92/93 looping was constructed in existing corridor. Small scale fibre optic and gas / electrical lines not reviewed thru EPP process but subject to evaluation thru SE regional office. Detailed public	Covered through NEB Process

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
environmental examination, including public meetings	consultation and environmental review undertaken under NEB process, with input from province.	
Rec: 3. TransCanada PipeLine should identify their future corridor requirements and provide assistance in determining other uses or conditions of use for this corridor.	Not entirely clear what this means. Thru NEB approval process (with input from province), TCPL must consider best practices for corridor. TCPL undertook an evaluation of an alternate route around the GSH as part of their planning for the 1992/93 loop.	TCPL does in fact do this and has been very forthcoming with the GSHPDC and participating Rural Municipalities.
Rec: 4. Any proposals for gas, water supply or similar development for which a major linear facility would be required (e.g., trunk pipeline, major service road) should require that ancillary pipelines, roads or similar features be included as part of the proposal that is reviewed for environmental implications.	Would be required. Projects in GSH subject to EIA have been reviewed as "complete" projects for an entire multi-year project, including ancillary facilities such as pipelines.	Covered in EIA/EPP Process
Rec: 5. The existing trail network in the Great Sand Hills should be examined by appropriate individuals, corporations and government agencies to identify and reclaim sites where roads or other linear features have caused significant scarring of the landscape or have created situations where future environmental damage may result.	Minimal trail abandonment and reclamation to date. Companies will be required to restore and stabilize trails when projects abandoned. Some preliminary consideration to abandonment strategies. Companies are limited in alterations they make to trails during operation with a view to minimizing long-term reclamation requirements. Both rural municipalities and the Sand Hills Planning Commission have done some work.	Trail Reclamation and a Trail/Access Management Plan are required to adequately address this recommendation
Rec: 6. The responsible parties (R.M.s and/ or Highways and Transportation) should take a stronger and more proactive role in ensuring that undeveloped road allowances are accorded a greater degree of protection. Use of these road allowances for access by resource companies, including seismic exploration companies, and by the public (including lessees of	Proactive efforts to assess road allowances come through EPPs and Commission Development Plan Bylaws and guidelines Projects consider road allowance trails in the same way as cross-country trails. However, existing road allowance trails often are in poor condition and require more extensive remediation prior to use (clay or gravel). Also difficult to restrict public use of road allowance trails. SE's decision to require EPP for new road allowance road across an area of the GSH resulted in concern from the RM of Piapot. Road allowances in the GSH are not considered appropriate access	

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
adjacent land) should be subject to greater review, and be subject to the same environmental protection and restoration requirements as apply on adjacent lands.	Use of existing trails is required and frequency of use may require the application of gravel. Acquisition of gravel sources within the GSH is encouraged.	
Rec: 7. Any new or replacement phone and small scale electrical transmission lines should be ploughed in.	Standard practice (requires confirmation from SAFRR).	All linear developments are encouraged to use the plough in method on Crown lands. Proponents have been very successful in utilizing the plough in method and in fact have refined this technique over the past few years to have minimal disturbance and damage, often resulting in no need for subsequent re -vegetation This helps reduce the issue of the introduction of invasive species and is in keeping with SAFRR's minimal disturbance policies.
Rec: 8. The reclamation standards provided in Section 3.9 of this report should be used to evaluate reclamation success following construction of utility corridors.	No new utility corridors. The current restoration guidelines would serve as minimum for evaluating reclamation success. (as they have been for O&G projects). Current restoration guidelines apply.	The restoration guidelines have continuously been improved over time and in fact continue to be reviewed and enhanced with input from industry players and stakeholders such as the Native Plant Society.
Obj: To ensure protection of the sensitive and unique features of the Great Sand Hills during construction and operation of utility corridors and associated facilities.	A three department co-harmonized review procedure is in place that offers a mechanism for ensuring development in an environmentally sound manner; in addition the Environmental Protection Plan (EPP) and planning commission development plan and bylaws also provide protection at both levels of government.	Minimal disturbance procedures are utilized by most players and in fact are stipulated in any surface lease and municipal development permit. Again the harmonized process with SIR, SE and SAFRR addresses these issues up front prior to granting of development approvals.
3.9 Reclamation		
Rec: 1. All developers should evaluate success of reclamation projects at least annually. Annual reclamation reports should be filed with Environment and Public Safety and Rural Development.	On-going practice. EIA projects require annual reclamation status reports for 5 years followed by a detailed 5–year evaluation. This is linked to reductions in the amount of performance bond the company must provide. Non-EIA projects do not have the formal reporting requirement and are not required to post bonds. Any development associated with a surface lease must be restored and reclaimed prior to receiving a site release. Developers should evaluate the success restoration annually until satisfactorily reclaimed. More recent minimum disturbance projects result in little reclamation	Restoration and reclamation guidelines and requirements are in place. As many of the projects are ongoing actual long-term success of restoration and reclamation has not been substantially measured.

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
	requirement. Ongoing annual reporting on the vast majority of locations would be a waste of resources. All developers should evaluate the success of pipeline easements annually until satisfactorily reclaimed. Any development associated with a surface lease must be restored and reclaimed prior to receiving a site release. All developments should be monitored annually for weed infestation.	
Rec: 2. Developers should ensure that annual reclamation evaluations are conducted by qualified personnel, according to accepted scientific techniques. Reclamation reports should include the qualifications of personnel undertaking the fieldwork.	Evaluations are undertaken by qualified individuals	This is a requirement as outlined in proponents EPP. SAFRR AND SE MONITOR.
Rec: 3. Provincial Government agencies including Environment and Public Safety, Energy and Mines, Rural Development and other departments as may be appropriate, should inspect development sites at least annually to ensure that procedures and standards established in this plan and in EPPs and EISs are being followed or achieved. These inspections should continue until site reclamation has been completed satisfactorily.	Government agencies inspect and regulate. Government agencies rely on reporting by proponents. Low-impact development practices result in reduced need for reclamation and follow up. Routine inspections of all sites would be a waste of resources. Sites visited periodically by various agencies but not in a systematic manner This is done by all agencies	This is on going. Concern has been expressed that with limited staff resources agencies have not been able to perform the monitoring and inspections at levels to safeguard environmental concerns. Site inspections are done on agricultural crown lease lands prior to releasing the proponent. Where remedial action is required SAFRR has mechanisms in place to ensure compliance.
Rec: 4. Environment and Public Safety should issue a certificate of reclamation to developers when reclamation programs achieve the various standards outlined in this section. This certificate, which should normally be issued only after at least five years of revegetation, should absolve the developer of all future surface reclamation	A reclamation certification program has not been initiated. SE does not have a reclamation certification program. SAFRR releases a lease only following abandonment. On EIA lands, company required to submit 5-year evaluation of each lease demonstrating acceptable reclamation prior to reduction in the amount of reclamation bond they post. While not a "certificate," this acceptance by SE of the success of reclamation as part of bond-reduction has a similar function. This does not absolve the company of future responsibility, including reclamation liabilities associated with abandonment.	SAFRR has a formalized release requirement in place. It appears to be working in other areas where reclamation has occurred on Crown land.

Goal/ Objectives/ Recommendations (as found in the original strategy)	**Comments**	**Analysis**
requirements, except at any sites redisturbed by the developer. Other decommissioning and abandonment requirements would continue to apply where specific requirements exist.		
Rec: 5. A system of bonding or its equivalent should be developed to ensure that developers have the necessary financial resources to achieve successful reclamation.	Standard practice on EIA lands. Company posts letter of credit (bond) with Minister of SE in an amount estimated to cover reclamation costs. Amount declines after 5-year evaluation, but a "maintenance" amount is maintained over life of project. Total includes sum per well for reclamation following abandonment and for 5 years after abandonment. The current "Environmental Fund" and the proposed "Orphan Well and Facility Program" administered by SIR and to be funded by industry will adequately address this issue. The process is in place; there is some question as to the adequacy of the funds. Discuss Environmental Fund and also Orphan Well and Facility Program	SEE COMMENTS SECTION. PROVISIONS NOW INPLACE!!
Obj: Short Term Objective (1 to 2 years) Stabilize soil in and surrounding disturbed areas that result from development to prevent soil loss.	Standard practice (gas developments). Typically exceeded due to low-impact construction. Seeding generally results in revegetation of disturbed areas within 1 year of construction.	SEE COMMENTS SECTION PROVISIONS NOW IN PLACE
Obj: Mid Term Objective (3 to 5 years) Restore stabilized areas to states resembling as closely as possible pre-disturbance conditions in terms of species composition, rangeland productivity and physical appearance.	Standard practice (gas developments). Typically exceeded due to low-impact construction. Seeding generally results in revegetation of disturbed areas within 1 year of construction. Colonization by local species ongoing once site stabilized.	SEE COMMENTS SECTION PROVISIONS NOW IN PLACE
Obj: Long Term Objective (greater than 5 years) Allow natural successional processes to occur in reclaimed areas, with the areas eventually returning to a state	Standard practice (gas developments). Typically exceeded due to low-impact construction. Seeding generally results in revegetation of disturbed areas within 1 year of construction. Colonization by local species ongoing once site stabilized. Total return to original vegetation is a relatively long-term process. Has not	SEE COMMENTS SECTION PROVISIONS NOW IN PLACE

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
indistinguishable from the pre-disturbance condition.	been detailed monitoring of sites 10 – 20 years after development (leases are not yet being abandoned).	
3.10 Vehicle Access		
Rec: 1. Road and trail development in the Great Sand Hills should be minimized.	Trail development is rationalized as part of all new gas projects in EPP / EIA. Existing trails used wherever possible, Trail Management Plans required as part of EPPs – provide detailed evaluation of trail need, traffic levels and likely management over life of project. Traffic reduction efforts are part of projects. Trail proposals are also assessed through Commission Development plan. Environmental Protection Plans Municipal requirements are to use existing trails and any trail improvement is done in consultation with land occupant/developer/municipality.	Provisions are in place to address this through EIA/EPP and Harmonized gas Process and Municipal Bylaws. Definite need to adopt an overall trail/access management plan.
Rec: 2. All developers, (gas, agricultural, R.M.s, etc.) should obtain approval from appropriate regulatory agencies prior to any road or trail development.	All gas projects must provide detailed consideration of trails (Trail Management Plans) as part of EPP / EIA. Agricultural users do not provide TMPs. RM of Piapot was requested to provide EPP for proposed new road across area of GSH. Note that Rec. 3.8 indicated "Non-graded trails used by ranchers for range management purposes should be exempt from this [corridor] review process". . This is being done Municipal policy requires existing trails to be used when ever possible. All new trails must receive approval of municipal Council.	Provisions in place to address this through EIA/EPP and Harmonized gas Process and Municipal Bylaws.
Rec: 3. Developers should be responsible for reclamation of new roads and trails they create.	Oil and gas operators recognize their responsibility to reclaim trails, although specifics of that requirement have not been defined. Advance consideration given during operation to future liabilities associated with trail abandonment – i.e., trail modification is minimized to reduce future reclamation requirements. Research required to demonstrate both need and techniques for trail reclamation. Also need discussion amongst stakeholders on desirability of trail abandonment and criteria for making those	Developers currently take responsibility for reclamation; the question remains what procedures and standard will reclamation entail. The GSHPDC has proposed a "Trail Reclamation Study" which is in abeyance at this time until the "Review" Process. SAFRR has reclamation requirements in place on Crown lands

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
	decisions. This exists with gas developers Developers have accepted responsibility for reclamation. The question remains what procedures and standard will reclamation entail. The GSHPDC are proposing a "Trail Reclamation Study" be undertaken in the very near future, pending available funding.	
Rec: 4. Trail development should be minimized in Prime Protection Areas.	No new trails developed (except perhaps for low-use rancher trials). This subject requires clarification. No new trails in PPA other than possibly by land occupant.	No new trail development has occurred yet in these areas.
Rec: 5. Any new roads or trails should minimize impacts to landforms and archaeological resources.	All new trails for gas undergo detailed evaluation as part of EPP / EIA process. Trail Management Plans required for all new gas trails This is done Concerns are generally covered off in the developers EPP or EIA. Concerns should be address more concisely by range management personnel and or occupants.	Addressed in EPP and Development conditions.
Obj: To provide efficient and effective vehicle access routes for approved land uses without significantly impacting the biological, physical, cultural and aesthetic resources of the Great Sand Hills.	This is being done. Trail management strategy is referenced in the Commission Development plan as well. This is being done	Trail management referenced in GSH Development Plans. Various initiatives attempted over the past years, however not successful to date in undertaking an actual project. Trail Reclamation study proposed for the area will hopefully addresses some of these issues.
4. Implementation		
Rec: 1. The Great Sand Hills Land Use Strategy should be adopted as departmental policy, by those provincial agencies with identified interests and mandates in the study **area**. This would include a commitment to consultation and the coordinated management of land use	Formally adopted by Cabinet in 1991. Recommendations from Sand Hills Strategy have been incorporated in department policies and guidelines. Formally adopted by Cabinet in 1991 and has been basis for SE practice in area before and since. Recommendations from Sand Hills Strategy have been incorporated in	Adopted by Cabinet in 1991. Ongoing provincial agency/department partnership with GSHPDC since 1991.

Goal/ Objectives/ Recommendations (as found in the original strategy)	Comments	Analysis
and environmental concerns.	department policies and guidelines.	
Rec: 2. The establishment of a planning district or authority is recommended to provide a means of ensuring coordinated and consistent land use management at the municipal level, and to provide a mechanism for the consideration, accommodation and/ or mediation of various public and private interests.	Great Sand Hills Planning District Commission was formed. Great Sand Hills Planning Commission, this should be reviewed The Great Sandhills District Planning Commission was established. Established the Great Sandhills District Planning Commission in August of 1993. Commission formation agreement between the Rural Municipalities of Piapot #110, Pittville #169, Fox Valley #171, and Clinworth #230.	Great Sand Hills Planning District Commission formed in 1993.
Rec: 3. Rural Development should provide direction and assistance to the Rural Municipalities, which administer land in the Great Sand Hills in establishing a local municipal development authority or district. The municipal authority or district should develop and implement local land use management plans and zoning bylaws that are consistent with the Great Sand Hills Land Use Strategy.	Standard procedure. The Rural municipalities involved in the Great Sand Hills District Planning Commission have Development Plans and Zoning Bylaws that are consistent with the Great Sand Hills Land Use Strategy. In 1994 Rural Municipalities adopted complimentary Development Plan and Zoning Bylaws. In 1998 and 2001 Bylaws were updated to address issues of concern. Municipalities may see the need to update Bylaws once again in the near future.	Great Sand Hills Planning District Commission was formed with assistance from GRAA. GSHDPC adopted Development Plan and Zoning Bylaw with assistance from GRAA.
Obj: To ensure that the goals, objectives and policies articulated in this land use strategy is properly and adequately addressed.	The goals and many of the objectives and recommendations of the strategy have been mostly achieved. More work is necessary in some areas. The strategy does not have a mechanism to address conflict well.	Most of the goals and objectives have, been met through the implementation of the GSHPDC Development Plan and Zoning Bylaw; Department and Agencies initiatives and new regulatory provisions; gas industry initiatives.
Obj: To ensure that strategy implementation involves a commitment to consultation and coordination among affected provincial agencies, municipal governments, advocacy groups, residents and land- users.	Consultation and coordination have been key components of provincial/municipal government administration of the strategy. To address such concerns the Municipalities may want to revisit the workings of the Commission Agreement as well as it make-up.	Consultation has been facilitated by the GSHPDC with affected departments and agencies, NGOs, Industry all participating in sharing concerns and initiatives. A more formalized mechanism may be more beneficial to ensure there is a measurable results and ongoing process review to ensure consistency.

APPENDIX D: Review Process

PROCESS

Initiate Review
- Preliminary analysis
- Government decision process
- Form Interdepartmental Committee
- Form Review Committee
- Confirm review process and communication strategy
- Gather information
- Initiate broad public involvement

Move forward with review
- Information collecting, sharing, analysis
- Analysis of and prepare report
- Evaluation of 1991 Strategy
- Issue identification and understanding
- Draft recommendations
- Public involvement

Finalize recommendations
- Draft recommendations development
- Take back to R.M.s, Commission and Departments
- Public review
- Approval

Implementation

The following are important groups to consider and involve when conducting the review (***the list is not to be considered complete at this time***):

- R.M.s of Clinworth, Fox Valley, Piapot and Pittville.
- Great Sand Hills Planning District Commission.
- SARM.
- Residents of the GSH area (owners and leaseholders).
- Environmentalists, provincial environmental groups (Saskatchewan Environmental Society, Canadian Parks and Wilderness Society).
- Saskatchewan Stock Growers Association.
- Individual gas producers in the area (e.g., Anadarko, Burlington Resources & others).
- Canadian Association of Petroleum Producers (CAPP).
- First Nations (traditional interests and TLE selections)
- Tourism and recreation associations.
- Members of the public.
- Provincial departments (SE, GRAA, SAFRR, SIR)

APPENDIX E: Ratings from Review Committee members (Provincial departments and RMs of Clinworth, Fox Valley, Piapot, and Pittville)

Goal/ Objectives/ Recommendations (as found in the original 1991 strategy)	**Implementation**			
Rating	**1**	**2**	**3**	**4**
	Not Started	**Something Started**	**Mostly Complete**	**Complete**
1.2 Land Management Goal and Objectives				
Goal: To maintain the Great Sand Hills as a distinctive landscape for social, cultural and economic benefits. **Rate:** 3.3			X X X X	X X
Obj: To maintain biological diversity and the processes necessary to sustain them. **Rate:** 3.0		X	X X	X
Obj: To protect both representative and unique landscapes. **Rate:** 3.2		X	X X	X X
Obj: To ensure sustainable use of renewable resources. **Rate:** 3.2		X	X X	X X
Obj: To ensure that development of non- renewable resources occurs in an environmentally sound manner. **Rate:** 3.5			X	X
Obj: To protect heritage resources and support heritage awareness and understanding. **Rate:** 3.5			X	X
3.1.1 Prime Protection Areas				
Rec: 1.Establish the Yakowan (12 sections) and Rastad (21 Sections) Areas as Prime Protection Areas to protect these sensitive landscapes from significant alteration, to protect examples of the variety of landforms that exist in the Great Sand Hills and to provide undeveloped areas for individuals seeking wilderness or solitude opportunities. **Rate:** 3.5			X X X	X X X
Rec: 2. Establish the Wachiwan Area (3/4 Section) as a Prime Protection Area to protect its sensitive landscape from significant alteration. **Rate:** 3.7			X X	X X X X X
Rec: 3. Establish the Straw Road Area (3 Sections) as a Special Use Area to protect the sensitive landscape from significant alteration and to provide for recreational opportunities such as picnicking and hiking. **Rate:** 3.0			X X X X X X	
Rec: 4. Establish the Cottonwood area, Crane Lake, and Skull Creek as Special Use Areas and establish development guidelines for these areas. This will require surveys for rare, threatened and endangered species. **Rate:** 1.3	X X	X		
Obj: To protect representative examples of the Great Sand Hills grasslands ecosystem and the processes that are required to sustain them. **Rate:** 3.75			X	X X X
Obj: To protect representative examples of the heritage resources of the Great Sand Hills. **Rate:** 3.75			X	X X X
Obj: To provide areas for wilderness recreation. **Rate:** 2.0		X		
Obj: To provide benchmark areas to monitor the effects of management practices on adjacent areas. **Rate:** 2.25	X	X X		X

Goal/ Objectives/ Recommendations (as found in the original 1991 strategy)	**Implementation**			
Rating	**1**	**2**	**3**	**4**
	Not Started	**Something Started**	**Mostly Complete**	**Complete**
3.2 Grazing Management				
Rec: 1. The grazing resource needs to be maintained. This will require: a) standardizing the grazing assessment system; b) providing on-site pasture demonstrations, improving fencing practices and implementation of better grazing practices; c) providing training to grazing managers on new technologies and ideas on range use and cattle management; d) providing programs that maintain species diversity and the sand hills grassland ecosystem while maintaining the grazing resource; and e) providing programs that improve fence line development and water facility improvement. **Rate:** 3.3		X		X X
Rec: 2. Range management practices need to be improved for livestock and wildlife. This should be coordinated with other uses. **Rate:** 3.5			X	X
Rec: 3. Research is required to determine the response of native grasses in the Great Sand Hills area to grazing, the season of use and timing of field use. **Rate:** 3.5		X		X X
Rec: 4. More agrologists who are trained in rangeland management with cattle management expertise are needed. Pasture managers also require range use training. **Rate:** 4.0				X X
Rec: 5. An expanded role for the community pasture system should be considered so that additional land uses are recognized and legitimized within the community pasture system. This will require: a) developing a vehicle access plan; and b) developing multiple land use objectives. **Rate:** 3.5			X	X
Rec: 6. Lease agreements on Crown land need to reflect producer concerns and proper range management. Therefore, it is recommended that: a) adjustments to rental rates only proceed after careful analysis; b) any new rental formula discourage mismanagement of the range; c) lease rental adjustments parallel livestock market conditions; d) a formal appeal process be developed to allow due consideration for concerns on rental charges or land use conflicts; and e) ongoing range evaluation be conducted to ensure protection of natural resources. **Rate:** 4.0				X X
Obj: To manage the range to ensure the long term viability of the native prairie. **Rate:** 3.3		X		X X
Obj: To enhance the economic viability of farms and ranches. **Rate:** 3.0		X	X	X
Obj: To ensure that livestock production is compatible with other land use objectives including: petroleum and gas		X X	X	X

Goal/ Objectives/ Recommendations **(as found in the original 1991 strategy)**	**Implementation**			
Rating	**1**	**2**	**3**	**4**
	Not Started	**Something Started**	**Mostly Complete**	**Complete**
development, wildlife management and recreation. **Rate:** 2.75				
Obj: To develop range management education programs for community pasture managers, patrons and grazing lease holders. **Rate:** 3.3		X		X X
Obj: To establish community pastures as centres of excellence in sustainable range management, grass management, ecological stability and biological diversity. **Rate:** 4.0				X
3.3 Oil and Gas Exploration and Development				
Rec: 1. All proponents should submit plans for any exploration or development in the Great Sand Hills to Environment and Public Safety. a) A detailed project proposal (EPP) will be required for any proposed seismic exploration or exploratory drilling in the moratorium area. The moratorium area is defined in Appendix C. Environment and Public Safety reserves the right to require a full Environmental Impact Assessment (EIA) for any exploration program if it is of sufficient scale, is in a sensitive area or otherwise satisfies any of the criteria in *The Environmental Assessment Act*. b) An environmental impact assessment will be required for any proposed gas production program in the moratorium area. Development of all mineral holdings of that proponent in that area of the sand hills is to be addressed in the EIA. However, only the developments proposed, for the initial 2 years must be addressed in site-specific detail. Future development details would require subsequent approval, and would be reviewed prior to actual development occurring. This is assuming that the overall development received initial Ministerial Approval. No production development in this area will be permitted without the proponent first having received Ministerial Approval pursuant to *The Environmental Assessment Act* for the complete development area. Completion of an exploration program will not guarantee that Ministerial Approval will be granted for production development, nor will assurance be given that all site-specific development plans will be approved even if the overall project has received Ministerial Approval. c) All exploration and development proposals in the Great Sand Hills outside the moratorium area will be subject to prior review of a project proposal by Environment and Public Safety. Any proposal which satisfies any of the criteria in *The Environmental Assessment Act* will be required to undergo an EIA and to obtain Ministerial Approval to proceed. An Environmental Plan will be required for any project not requiring an EIA.				X X X X X

Goal/ Objectives/ Recommendations (as found in the original 1991 strategy)	**Implementation**			
Rating	**1**	**2**	**3**	**4**
	Not Started	**Something Started**	**Mostly Complete**	**Complete**
d) All plans for exploration and development in any part of the Great Sand Hills must be presented by the proponent to the appropriate Rural Municipality and to a public meeting or similar forum in the project area. These presentations must occur prior to the presentation of a project proposal or similar documentation to Environment and Public Safety for environmental screening. The Department retains the right to waive the public meeting requirement for small-scale exploration projects in less environmentally sensitive areas. **Rate:** 4.0				
Rec: 2. Well sites, flow-lines and access routes should be carefully sited to avoid areas with high erosion potential. **Rate:** 3.5		X	X	X X X X
Rec: 3. Drilling fluids should be contained in mud tanks used in association with a small transfer pit. Lined mud pits are not acceptable as they unnecessarily disturb stabilized soils and thereby increase the risk of erosion. **Rate:** 4.0				X X X X X
Rec: 4. Drilling fluids and drilling fracture fluids should be disposed of in accordance with Energy and Mines guidelines. Certain waste drilling fluids may be disposed on lease, on access trails and on pipeline rights- of-way, so long as this is done in accordance with these guidelines. This practice is currently limited to gypsum and ammonium sulphate- based fluids. Potassium chloride based fluids may not be disposed on lease and must be either deep well- injected or disposed of in previously approved surface facilities. **Rate:** 3.75			X	X X X
Rec: 5. Water co-produced with natural gas should be flow-lined to central facilities for handling and disposal when technically feasible. Detailed water-management plans should be presented in the EPP or EIA. **Rate:** 4.0				X X X
Rec: 6. Flowlines should be installed in a manner which reduces surface disturbance (e.g., plowed in rather than trenched, wherever possible). **Rate:** 3.71			X X	X X X X X
Rec: 7. Access and pipeline rights-of-way should follow the existing trail network whenever possible, and should use a common right-of-way. New rights-of-way should be used only where existing routes are not available and where use of existing trails would increase overall environmental impact. **Rate:** 3.8			X	X X X X
Rec: 8. Development activities should minimize habitat loss and avoid areas of key wildlife habitat for priority species during high- sensitivity periods. Examples of sensitive species and areas include: raptor nesting sites, burrowing owl burrows, piping plover nesting areas, critical winter habitat for ungulates and sharp-tailed grouse dancing grounds.			X	X X X X

Goal/ Objectives/ Recommendations (as found in the original 1991 strategy)	**Implementation**			
Rating	**1**	**2**	**3**	**4**
	Not Started	**Something Started**	**Mostly Complete**	**Complete**
All development sites should be surveyed for rare and endangered species of flora and fauna. The results of these surveys should be included in the EPP and EIA. **Rate:** 3.8				
Rec: 9. Developers should provide an environmental monitor(s) on-site, full-time during all exploration and development activities to ensure that all environmental protection measures in the impact assessment or protection plan are implemented Monitors should also assist the developer in anticipating and avoiding unforeseen environmental impacts. The monitor should have the developer's written authority to halt exploration or development when in the monitor's professional opinion, unacceptable environmental damage could be done by the ongoing activity. Environment and Public Safety should have the right to approve project monitors. **Rate:** 3.8			X	X X X X
Rec: 10. All development sites should undergo heritage resource screening to determine archaeological sensitivity (see Section 3.6). **Rate:** 3.75			X	X X X
Rec: 11. All disturbed areas should be stabilized and reclaimed using procedures and to the standards indicated in this plan (see Section 3.9). **Rate:** 3.5			X X	X X
Rec: 12. All new gas development activities (aside from limited scale exploration or similar undertakings) in the Great Sand Hills should require posting of a bond or similar instrument with the Government of Saskatchewan. The amount of the bond or equivalent guarantee should be adequate to ensure effective reclamation of disturbed locations. **Rate:** 3.7			X	X X
Rec: 13. Gas developers and Rural Municipalities should cooperate in preparing fire prevention and control plans. These plans are to be presented in EPPs and/or EIAs. **Rate:** 2.4	X	X X	X	X
Rec: 14. Environment and Public Safety, Energy and Mines, Rural Development and other government departments as may be appropriate should inspect development sites at least annually to ensure that procedures and standards established in this strategy and in environmental protection plans and Environmental Impact Statements (EIS) are being followed or achieved. These inspections should continue until site reclamation has been completed satisfactorily. There is a need for more environmental inspectors with training in reclamation technology to undertake these inspections. **Rate:** 3.25		X	X	X X
Rec: 15. Developers should be encouraged to provide educational opportunities relative to their activities and the means by which environmental protection is accomplished.	X		X	

Goal/ Objectives/ Recommendations (as found in the original 1991 strategy)	**Implementation**			
Rating	**1**	**2**	**3**	**4**
	Not Started	**Something Started**	**Mostly Complete**	**Complete**
Such programs should include site visits in response to requests by environmental interest groups, local government officials and land owners/occupants. **Rate:** 2.0				
Rec: 16. Oil and natural gas mineral rights currently held by the Crown in the moratorium area, and any oil and gas rights which subsequently may revert to the Crown in this area, should not be offered for sale by Energy and Mines for a period of at least three years. Environment and Public Safety, Energy and Mines, and other government agencies will use experience with development in the moratorium area to determine if land withheld from sale should be made available in the future for development. **Rate:** 3.5			X	X
Obj: To ensure the hydrocarbon resources in the development zones of the Great Sand Hills area are delineated and evaluated in a thorough manner. **Rate:** 2.0		X		
Obj: To ensure the hydrocarbon resources are developed and produced such that the maximum economic value is obtained. **Rate:** 2.0		X		
Obj: To ensure the hydrocarbon reserves are recovered with minimum disturbance to the biological, physical and cultural resources of the area. **Rate:** 3.25		X	X	X X
3.4 Wildlife Management				
Rec: 1. Formal consultations are required between Crown land lessees in the Great Sand Hills and officials of the Department of Parks and Renewable Resources, in which lessees are to be given an opportunity on a voluntary and informed basis to provide consent to parcels of land being designated Critical Wildlife Habitat. **Rate:** 3.5			X	X
Rec: 2. Wildlife and livestock managers should improve their working relationships to more closely manage range resources for both livestock and wildlife. **Rate:** 2.75		X X	X	X
Rec: 3. Hunting should be maintained in all areas of the Great Sand Hills as it is a sustainable use of the resource and an important wildlife management tool. **Rate:** 3.25			X X X	X
Rec: 4. Development should proceed with minimization of habitat loss and disturbance to wildlife, and without sacrificing habitat quality, including water quality. **Rate:** 3.7			X	X X
Rec: 5. Prior to major development in the Great Sand Hills, the following should be identified: critical deer and antelope wintering/fawning areas, sharp-tailed grouse dancing grounds and associated nesting cover, and nesting/denning areas of rare and endangered species. Where identified, additional restrictions or prohibitions may be -required. These areas could be classified as Special Use areas. **Rate:** 3.3		X		X X
Rec: 6. Road and trail development must be carefully planned to minimize impacts on the natural resources of the Great Sand Hills. (See Recommendation 7, Section 3.3.) **Rate:** 2.8	X	X	X	X X

Goal/ Objectives/ Recommendations **(as found in the original 1991 strategy)**	**Implementation**			
Rating	1	2	3	4
	Not Started	**Something Started**	**Mostly Complete**	**Complete**
Rec: 7. Additional research is necessary to more fully understand ecological conditions and relationships in the Great Sand Hills, and to predict the impact of land uses. Information should be stored in a central data system to allow access to users. **Rate:** 1.7	X	X X		
Rec: 8. The potential of the Great Sand Hills to support additional non-consumptive wilderness and wildlife based recreation should be examined. **Rate:** 1.7	X	X X		
Rec: 9. During periods of extreme fire hazards, in consultation with affected Rural Municipalities, Parks and Renewable Resources should determine the need to close or restrict hunting and other recreational activities. **Rate:** 4.0				X X
Obj: To maintain the biological diversity of the Great Sand Hills. **Rate:** 2.0		X X X		
Obj: To provide quality recreational opportunities such as hunting, bird watching and other wildlife based activities. **Rate:** 2.0		X X		
Obj: To ensure that the use of wildlife resources is sustainable. **Rate:** 3.3			X X	X
3.5 Tourism				
Rec: 1.An advisory group should be formed to prepare a Tourism Development Plan. This group should be comprised of local citizens, interest groups and relevant government agencies. **Rate:** 3.0		X		X
Rec: 2. The development plan should be completed prior to any facility development, tourism promotion or highway signage improvements. **Rate:** 3.5		X		X X X
Rec: 3. Tourism development in the Great Sand Hills should only proceed when resources can be adequately protected, and when development is compatible with local life styles. **Rate:** 3.0		X		X
Rec: 4. Non-consumptive use of the Great Sand Hills such as bird watching, hiking and heritage awareness programs should be emphasized. **Rate:** 1.7	X	X X		
Rec: 5. Hunting should be maintained in the Great Sand Hills as an economic and recreational activity and to serve as a wildlife management tool. **Rate:** 3.7			X X	X X X X
Rec: 6. Except for the possible development of day-use facilities in the Straw Road Area, tourism facility development should occur outside the Great Sand Hills. **Rate:** 3.7			X	X X X
Rec: 7. Representative and unique landscapes of the Great Sand Hills should be protected through appropriate land use mechanisms such as zoning. **Rate:** 3.2		X	X X	X X
Obj: To promote sustainable tourism of the Great Sand Hills without significantly impacting biological, physical and			X	X

Goal/ Objectives/ Recommendations (as found in the original 1991 strategy)	Implementation			
Rating	1	2	3	4
	Not Started	Something Started	Mostly Complete	Complete
heritage resources or other existing land uses. **Rate:** 3.5				
Obj: To protect both representative and unique landscapes. **Rate:** 3.0			X X X	
3.6 Archaeological Resources				
Rec: 1. Developers should refer all land use and development proposals for the Great Sand Hills to Heritage Branch for review as early in the development-planning process as possible. **Rate:** 3.75			X	X X X
Rec: 2. The existing procedure whereby Heritage Branch participates in project screening and reviews under the Environmental Impact Assessment process coordinated by SEPS should be continued. **Rate:** 3.75			X	X X X
Rec: 3. Development activities associated with existing land-uses such as dugout or other local excavation, building or corral construction or new trail development should be referred to Heritage Branch for screening before initiating construction. Where provincial Crown lands are involved, Rural Development should assist lessees with these referrals. **Rate:** 2.0		X		
Rec: 4. Promoters or facilitators of any tourism ventures involving public access into the Great Sand Hills should be fully apprised of the regulations concerning artefact collection, excavation or other disturbance of heritage resources. An information package on heritage resources and the legal prohibitions on site disturbance and collection should be made available to hunters and other visitors to the area. **Rate:** 2.0		X		
Rec: 5. Any tourist trails or other similar facilities should avoid sites of high heritage resource value or potential, except where these sites are part of a formal and carefully controlled interpretative program. **Rate:** 3.0			X	
Obj: To protect the archaeological resources of the Great Sand Hills. **Rate:** 3.5			X	X
Obj: To ensure study and/or salvage of archaeological resources when protection is not feasible. **Rate:** 4.0				X X
Obj: To encourage public awareness of the archaeological resources of the Great Sand Hills. **Rate:** 2.0		X		
3.7 Groundwater Resources				
Rec: 1. The current system of managing industrial uses of groundwater in the Great Sand Hills should be maintained. The Saskatchewan Water Corporation should review all proposed industrial uses of groundwater to reduce potential conflicts between all water users, including wildlife. **Rate:** 3.75			X	X X X
Rec: 2. Water quality should be sampled by gas developers in all dugouts and water wells within 250 meters of all gas wells and within 1000 meters of all brine disposal or evaporation			X X	X X

Goal/ Objectives/ Recommendations (as found in the original 1991 strategy)	**Implementation**			
Rating	**1**	**2**	**3**	**4**
	Not Started	**Something Started**	**Mostly Complete**	**Complete**
facilities prior to initiation of drilling or construction. Environment and Public Safety should require water quality sampling within a larger radius of proposed developments when warranted. Baseline data should be reported in the project proposal or environmental impact statement prepared for the project. **Rate:** 3.5				
Rec: 3. Drill cuttings and sump fluid solids should be buried on lease only if they are covered by a minimum of two meters of low permeability material and only if the groundwater level is at least two meters below the base of the pit. Ammonium sulphate solids should be dried on surface and mixed with native soil materials prior to burying. **Rate:** 4.0				X X X
Rec: 4. Water supply and distribution should be used more fully as a range management tool. New wells and dugouts should be part of comprehensive range management and planning undertaken by ranchers in cooperation with range management specialists. **Rate:** 2.3		X X	X	
Rec: 5. Any water wells or dugouts constructed by the gas industry to supply water for drilling fluid make-up or irrigation should be located in cooperation with the land owner/ occupant. When abandoned, these facilities should be made available to livestock operators. **Rate:** 4.0				X X X
Rec: 6. In order to prevent groundwater contamination, direct livestock access to new dugouts should not be allowed and should be phased out as improvements or renovations are made at existing locations. Water should be pumped into tanks near the dugout. Solar powered pumps are recommended as environmentally and aesthetically preferable to conventionally powered pumps. **Rate:** 3.0		X	X	X
Rec: 7. Limited, short term use should be made of available shallow groundwater for irrigation of wellsites and rights-of-way as part of reclamation efforts, particularly in locations which are difficult to reclaim. **Rate:** 2.7	X		X	X
Rec: 8. The use of purified, produced water for reclamation of disturbed locations should be encouraged. **Rate:** 1.0	X X			
Rec: 9. Industrial water developments (e.g., water wells, pipelines, irrigation projects) in the Great Sand Hills should be subject to the environmental impact assessment process. **Rate:** 4.0				X X
Obj: To preserve the quality of groundwater resources in the Great Sand Hills. **Rate:** 2.3		X X	X	
Obj: To ensure availability of shallow groundwater resources for human domestic use, and use by livestock and wildlife. **Rate:** 2.5		X	X	
Obj: To use groundwater as a tool for management of the rangeland resource. **Rate:** 3.5			X	X
3.8 Utility Corridors				
Rec: 1. All proposed corridor projects should undergo environmental screening and review. This recommendation			X	X X

Goal/ Objectives/ Recommendations (as found in the original 1991 strategy)	**Implementation**			
Rating	**1**	**2**	**3**	**4**
	Not Started	**Something Started**	**Mostly Complete**	**Complete**
applies to construction, upgrading or expansion to facilities such as: graded roads, pipelines, transmission lines and domestic electricity, telephone or natural gas distribution lines. Non-graded trails used by ranchers for range management purposes should be exempt from this review process. **Rate:** 3.75				X
Rec: 2. Any future expansion of the TransCanada PipeLine system should be subject to comprehensive environmental examination, including public meetings. **Rate:** 4.0				X X
Rec: 3. TransCanada PipeLine should identify their future corridor requirements and provide assistance in determining other uses or conditions of use for this corridor. **Rate:** 4.0				X X
Rec: 4. Any proposals for gas, water supply or similar development for which a major linear facility would be required (e.g., trunk pipeline, major service road) should require that ancillary pipelines, roads or similar features be included as part of the proposal that is reviewed for environmental implications. **Rate:** 4.0				X X
Rec: 5. The existing trail network in the Great Sand Hills should be examined by appropriate individuals, corporations and government agencies to identify and reclaim sites where roads or other linear features have caused significant scarring of the landscape or have created situations where future environmental damage may result. **Rate:** 2.0		X X X X		
Rec: 6. The responsible parties (R.M.s and/ or Highways and Transportation) should take a stronger and more proactive role in ensuring that undeveloped road allowances are accorded a greater degree of protection. Use of these road allowances for access by resource companies, including seismic exploration companies, and by the public (including lessees of adjacent land) should be subject to greater review, and be subject to the same environmental protection and restoration requirements as apply on adjacent lands. **Rate:** 2.75		X X	X	X
Rec: 7. Any new or replacement phone and small scale electrical transmission lines should be plowed in. **Rate:** 3.3		X		X X
Rec: 8. The reclamation standards provided in Section 3.9 of this report should be used to evaluate reclamation success following construction of utility corridors. **Rate:** 3.0	X			X X
Obj: To ensure protection of the sensitive and unique features of the Great Sand Hills during construction and operation of utility corridors and associated facilities. **Rate:** 4.0				X
3.9 Reclamation				
Rec: 1. All developers should evaluate success of reclamation projects at least annually. Annual reclamation reports should be filed with Environment and Public Safety and Rural Development. **Rate:** 3.7			X	X X
Rec: 2. Developers should ensure that annual reclamation evaluations are conducted by qualified personnel, according to accepted scientific techniques. Reclamation reports should				X X

Goal/ Objectives/ Recommendations (as found in the original 1991 strategy)	**Implementation**			
Rating	**1**	**2**	**3**	**4**
	Not Started	**Something Started**	**Mostly Complete**	**Complete**
include the qualifications of personnel undertaking the fieldwork. **Rate:** 4.0				
Rec: 3. Provincial Government agencies including Environment and Public Safety, Energy and Mines, Rural Development and other departments as may be appropriate, should inspect development sites at least annually to ensure that procedures and standards established in this plan and in EPPs and EISs are being followed or achieved. These inspections should continue until site reclamation has been completed satisfactorily. **Rate:** 3.7			X	X X
Rec: 4. Environment and Public Safety should issue a certificate of reclamation to developers when reclamation programs achieve the various standards outlined in this section. This certificate, which should normally be issued only after at least five years of revegetation, should absolve the developer of all future surface reclamation requirements, except at any sites redisturbed by the developer. Other decommissioning and abandonment requirements would continue to apply where specific requirements exist. **Rate:** 2.0	X		X	
Rec: 5. A system of bonding or its equivalent should be developed to ensure that developers have the necessary financial resources to achieve successful reclamation. **Rate:** 3.7			X	X X
Obj: Short Term Objective (1 to 2 years) Stabilize soil in and surrounding disturbed areas that result from development to prevent soil loss. **Rate:** 4.0				X X
Obj: Mid Term Objective (3 to 5 years) Restore stabilized areas to states resembling as closely as possible pre-disturbance conditions in terms of species composition, rangeland productivity and physical appearance. **Rate:** 4.0				X X
Obj: Long Term Objective (greater than 5 years) Allow natural successional processes to occur in reclaimed areas, with the areas eventually returning to a state indistinguishable from the pre- disturbance condition. **Rate:** 3.5			X	X
3.10 Vehicle Access				
Rec: 1. Road and trail development in the Great Sand Hills should be minimized. **Rate:** 3.4		X	X	X X X
Rec: 2. All developers, (gas, agricultural, R.M.s, etc.) should obtain approval from appropriate regulatory agencies prior to any road or trail development. **Rate:** 3.0		X	X X X	X
Rec: 3. Developers should be responsible for reclamation of new roads and trails they create. **Rate:** 3.4			X X X	X X
Rec: 4. Trail development should be minimized in Prime Protection Areas. **Rate:** 2.5	X X			X X
Rec: 5. Any new roads or trails should minimize impacts to		X	X	X

Goal/ Objectives/ Recommendations (as found in the original 1991 strategy)	**Implementation**			
Rating	**1**	**2**	**3**	**4**
	Not Started	**Something Started**	**Mostly Complete**	**Complete**
landforms and archaeological resources. **Rate:** 3.4				X X
Obj: To provide efficient and effective vehicle access routes for approved land uses without significantly impacting the biological, physical, cultural and aesthetic resources of the Great Sand Hills. **Rate:** 3.3		X		X X
4. Implementation				
Rec: 1. The Great Sand Hills Land Use Strategy should be adopted as departmental policy, by those provincial agencies with identified interests and mandates in the study area. This would include a commitment to consultation and the coordinated management of land use and environmental concerns. **Rate:** 4.0				X X X
Rec: 2. The establishment of a planning district or authority is recommended to provide a means of ensuring coordinated and consistent land use management at the municipal level, and to provide a mechanism for the consideration, accommodation and/ or mediation of various public and private interests. **Rate:** 4.0				X X X X
Rec: 3. Rural Development should provide direction and assistance to the Rural Municipalities which administer land in the Great Sand Hills in establishing a local municipal development authority or district. The municipal authority or district should develop and implement local land use management plans and zoning bylaws that are consistent with the Great Sand Hills Land Use Strategy. **Rate:** 3.75			X	X X X
Obj: To ensure that the goals, objectives and policies articulated in this land use strategy are properly and adequately addressed. **Rate:** 2.5		X	X	
Obj: To ensure that strategy implementation involves a commitment to consultation and coordination among affected provincial agencies, municipal governments, advocacy groups, residents and land- users. **Rate:** 3.5			X	X

APPENDIX F: Workshop Compilation

GREAT SAND HILLS LAND USE STRATEGY REVIEW COMMITTEE FLIP CHART NOTES ON WORKSHOPS AND POINTS FROM PUBLIC MEETINGS - April / May / June 2003

NOTES FROM WORKSHOPS

STATUS QUO

This scenario is based on current operations and the 1997-98 Great Sand Hills Planning District bylaws. Land use would continue to follow the existing municipal bylaws and provincial regulations.

PROS:

- processes are already established and proven
- verification of what is working based on analysis and experience
- allows for change. Ways of doing business have changed
- gas industry conducts business in an orderly fashion
- GSH Planning District Commission gives people comfort
- there is consistency in three of the RMs
- industry and cattle producers have come a long way in advancement of practices and improvements
- industry, government and municipal departments are working together better
- environmental groups are comfortable with the process
- flexibility
- onus on developer to show land can be rezoned
- have managed to raise awareness of process through the years
- minimal disturbance versus reclamation. People have begun to see the cost/benefits of avoiding the damage in the first place

CONS:

- no research on cumulative impact
- all impacts need to be assessed
- directional drilling not standard, but should be
- should be some kind of zoning based on multi-well/single well
- too many grandfathered mineral leases
- does not address representivity of the GSH in Prime Protection Areas
- requires clear definition of ES1 and ES2 zoning
- long term monitoring is weak
- does not provide long term protection
- Prime Protection Areas are not clearly defined
- no guarantee that when an RM follows the process it will lead to rezoning
- process is lengthy and many projects put on hold because of it
- no clear objective of what the land management is for
- needs fine tuning

- pressure on Commission from conflicting interests
- a lot of misunderstanding about the process (public and companies)
- not enough science to definite environmental integrity and biodiversity (ie. How many acres are necessary for the protection of a species)
- not enough flexibility for RMs (please note a contradiction that this also appears as pro as having enough flexibility)
- local process versus provincial direction may conflict on occasion
- changes in RM councils may result in policy changes
- may not be the best approach within the current provincial economy
- lack of education of people working in the area
- industry does not do a good enough job telling people about successes
- need for industry to put the bar higher and work toward it

B. STATUS QUO PLUS ADJUSTMENTS

This scenario would allow clear definition of ES1 and ES2 lands. Could also consider eliminating ES1 and ES2 all together and classify all ES1 and ES2 lands as generally Environmentally Sensitive and address in an appropriately developed manner. Develop a mechanism to ensure no access to off-limit areas and clearly establish the parameters of those off-limit areas. Administrative changes would need to be considered as well, including: performance bonds, environmental monitors who report to the commission or RM and funding to hire administrative services.

PROS:

- opportunity to clearly define zoning
- consistency and certainty
- perhaps more formalized structure for role of the Planning Commission
- industry should also be on the board
- Commission should get more help than currently does
- the zoning would be able to stand on its own
- any changes would involve all stakeholders
- allows for technological advances
- environmental monitors would examine all uses in the 'big' zone
- monitoring is better, although still weak in the long term
- have guidelines for environmental monitors
- other RMs may wish to participate by joining a Commission
- provides increased certainty to off-limit areas. Size and placement can provide representivity for the landscape like in Maple Creek
- tools for land use planning already there
- provides certainty
- allows for revenue from areas that have been sterilized
- simple process
- monetary assurances through bonds
- could have leaseholder involvement

CONS:

- there would be a perception that the protection that is there now is lost. Right now the view is that ES1 areas are protected, and this would send a negative signal
- loss of control to RMs
- ES1 rating helps to protect some lands
- face potential disagreement over technological advances
- no public input
- no real deterrent to avoid damage
- needs to be reviewed constantly
- does not give long term protection
- areas need to be determined and defined (need to establish the philosophy behind the parameters)
- potential to fragment the area further (need to define off-limit areas).
- if crown reserves are designated they cannot be sold off in the future
- no long-term monitoring
- ownership of environmental monitor process. Some feel the government should hire, and pay for, monitors
- lack of experienced workers in the field. Some workers not familiar with this particular area
- need to develop local knowledge
- need more Industry and Resources government inspectors to provide ongoing monitoring
- companies need to educate people at all levels
- where and who are the people who will provide the money to make adjustments and study new definitions
- criteria must be applied to all everybody

C. EXPANSION OF PRIME PROTECTION AREAS (identified in 1991 Great Sand Hills Land Use Strategy);

There are currently 36.5 sections under crown reserve. To expand the Prime Protection Area, need to consider issues such as: ground cover, accessibility, topography, based specifically on access, representative land formation, inoperable land. (One group discussed combining option B with Option C and to examine any undeveloped areas to start to start the process. Objectives for this combined option would need to be clearly outlined, defining issues such as what are we trying to protect, and what is our philosophy?)

PRO:

- Prime Protection Areas are too small
- need to preserve large enough Prime Protection Areas to protect unique features
- need to protect with provincial legislation
- crown reserve land should be held in perpetuity including surface and subsurface rights
- Prime Protection Areas could be expanded to include ES1 lands
- clearly define acceptable land uses within Prime Protection Areas

- tools for land use planning already there
- provides certainty
- allows for revenue from areas that have been sterilized
- clarifies issues
- greater protection for the ecosystem
- addresses way of life, biodiversity and other issues
- helps industry
- allows existing process to continue
- allows for more diversity
- may gain money from other industries on lands i.e. ecotourism
- allows for more parameters to make decisions
- allows for more appropriate definition of Prime Protection Areas
- invasive plant monitoring
- local involvement in Prime Protection Areas

CONS:

- disagreements over ES1 lands
- limits industry
- need to define Prime Protection Area (who will protect it? What will it be protected from? etc.)
- once the Prime Protection Area is changed it will be difficult to change it back
- expansion of Prime Protection Areas does not consider species at risk
- how will accountability be enforced once Prime Protection Area is expanded?
- does not allow for true representative areas
- targets only one industry (gas), other uses such as ecotourism and grazing not considered
- could tend to fragment areas that need protection
- funding that may be required (i.e. to hire environmental monitors
- expansion of any Prime Protection Area has an impact on provincial revenue. It is a major loss to provincial coffers
- lack of research means no protection for any species not yet known out there
- ignores what is going on outside Prime Protection Areas
- may stifle future development for certain areas by creating a negative perception
- should be ground truthed
- shallow water pipelining should also mean environmental conditions
- what is already there can stay there, but no new developments
- Prime Protection Area should mean no surface access for gas developments (slant drilling may be possible)
- many different definitions of undisposed minerals
- future investments could be jeopardized
- may be sending message that business not wanted

D. ENHANCED OR CHANGED ROLE FOR FORMALIZED STRUCTURES

Currently RMs and Planning District Commission administer the local process. Build new relationships between provincial and municipalities to manage land use in the area. Possibly create a formalized board/body to determine issues, which would not preclude local decision-making consultation. Ask the question: should it be a provincial decision making board or local/regional board? Parameters need to be defined for example, is the aim along the lines of the Manitou Land Use Plan (provincial authority), Qu'Appelle (corporate board combining provincial and municipal authority) or GSH Planning District Commission (advisory only).

PROS:

- forces the province to define provincial interests (are the priorities it socio-economic or environmental)
- committee must have representation from industry, residents and government
- more decision making
- easier to funnel information
- takes pressure off RMs
- cost share the environmental monitor
- legalizes local decision processes
- decisions consistent for region
- single agency to deal with (one-stop shopping)
- possible larger membership (additional RMs)
- enhances current process by providing additional resources for research and review
- staff with funding
- more frequent meetings
- expedites the process
- protect what is producing revenue
- revenue generated in the GSH through gas or cattle should be invested back into the area to keep it in good shape

CONS:

- may not be appropriate in today's world. In past five years we have extended local autonomy. This may remove some of that autonomy, and leave some feeling government is telling people what to do
- may increase bureaucracy
- removes public consultation processes. Current Planning Commission allows public input
- will not be any better at solving the present issues
- parameters and process must be defined
- funding
- time-consuming
- advisory. Although advice is usually followed, there is nothing that requires this
- should RMs be mandated in?
- should RMs be able to opt out?

- fantasy commission would have an advisory on staff which would help in consistency in giving advice to new administrators, councils etc.
- less re-education

E. MULTI USE SCENARIO:

This scenario follows the intent of the 1991 Strategy. The original 1991 Strategy identified the entire area for multi use purposes which meant it was available for gas development except in Prime Protection Areas. Prime Protection Areas remain protected from gas development. Lands would be available for development subject to environmental protection. Possibly change zoning bylaws to those similar to Maple Creek.

PROS:

- might speed up process
- eliminates some zoning issues and pressures for council
- potential increase in employment taxes and prosperity
- process would be familiar as used in the rest of the province
- would level the playing field
- before anything happening various methods including slopes, topography etc could be used to identify areas that could not be developed

CONS:

- cannot be stand-alone. If this option is chosen it have to be done in conjunction with expansion of Prime Protection Areas
- does not mean representivity
- deals only with gas development
- does not solve present problems
- moving backwards in time
- possibly more chaotic
- commission and RMs would have less criteria to go by
- compromises the existing ecosystem
- places primary responsibility on EPP process
- EPP process may be too weak to stand the responsibility
- removes RM input
- potential for more reviews and more lobbying. Every time there is anew use proposed it will trigger a new review

F. START OVER – TRUE SOCIO ECONOMIC AND BIOPHYSICAL STUDY

This means undertaking detailed research an analysis of all factors.

PROS:

- would have the science on which to base decisions rather than assumptions
- experience gained to date could apply to designing a better process
- implies full review of all processes
- could learn from previous mistakes

CONS:

- means current process is not working
- length of time to address issues would not meet current expectations and commitments
- no developing resources would carry a high cost
- high cost of obtaining research and data
- what happens while the new plan is being developed?
- too ambitious

None of the workshops thought that starting over was a viable option.

ADD ON OPTIONS

G. INCREASE PROTECTED AREAS THAT REPRESENT THE CHARACTER OF THE GREAT SAND HILLS

PROS:

- once you increase the Prime Protection Areas they would have to remain crown land forever
- should allow surface use (but only certain types of compatible uses). No dugouts, water wells etc.

CONS:

- must still protect from over grazing
- not limit future development

H. MODIFICATION OF ABOVE OPTION

There are numerous mineral leases in ES1 areas which were issued to gas companies before the 1991 Strategy came into being. For these leases, gas companies want the ability to follow standard due process (EPP and EIA) like any other oil and gas development in the province and bypass rezoning requirements. If the site proves to be developable the companies then want to be able to develop the site without zoning change. If the site is not developable, then the company wants compensation from the province. The qualifier would be the time allotted to prove that the site is developable would be limited, and the onus would be on the gas companies to meet the deadlines.

PROS:

- more science would be done
- more fair to operators with existing leases
- allows drilling without a zoning change

CONS:

- massive revenue loss to the province and industry
- does not take into account representative areas

I. ESTABLISHMENT OF A GSH OR NATIVE GRASSLANDS PROTECTION ACT

The general feeling was this would elevate control to the province and provide protection in perpetuity. Public hearings would be required and a land schedule would be needed.

PROS:

- long term protection for the GSH
- certainty for everyone

CONS:

- quantifiable science needed
- takes autonomy away from local people
- taxes to municipalities, as well as employment and other benefits could be taken away

Under this scenario is was suggested that no new mineral sales in ES1 Lands be made and that timelines for existing leases be set. The onus would be on the companies to identify developable areas and to allow leases to lapse in areas considered a 'no go'.

In some areas there would be no development of any kind, increasing potential undeveloped areas, reducing revenue to province and reducing grazing, hunting and other uses. Some presently undeveloped areas would become developed.

GENERAL WORKSHOP ISSUES INCLUDE

- lack of science
- need for cumulative impact data
- need for protection for some, if not all, areas
- need to define ES1 and ES2
- need for more clarity
- need for more certainty
- need to define Prime Protection Areas
- need to be fair to all industries in the GSH and not target gas development
- industry technology is much improved
- need to address ground water concerns
- what message does Saskatchewan want to send
- do not need to start from scratch. It is too expensive and does not take into account what is working
- some things are working
- concern about the process of the review strategy itself
- Planning District Commission is doing a good job
- all parties not doing a good enough job getting information out to the public

TOPICS RAISED IN PUBLIC MEETINGS INCLUDE

- questions about the process and lateness of public meetings
- questions about the membership in the review

- today leaders are uninformed
- concern that First Nations not involved in process
- GSH is the largest contiguous area of native prairie in Saskatchewan and it is vital to preserve it
- province's economic challenges sometimes exaggerated when it comes to the GSH
- future of the GSH should not depend on the economy of the province
- Environmental Assessment process is not adequate to protect the area
- need clear definition of ES1 and ES2 lands
- GSH must be protected for future generations
- the government promised but failed to provide networks of protected areas
- must consider world-wide loss of species in an area where species and habit are at risk
- still haven not catalogued the flora and fauna
- not enough science has been done in the area so difficult to manage what you do not know that you have
- need conservation easements in perpetuity in order to take control away from the land owner
- leave the existing strategy in place
- we should not abandon existing strategy just because there is no economic gain to be made
- the GSH is a provincial natural treasure
- there is no balanced approach, you either restore the environment or you destroy it
- need a provincial Act to protect the area
- need to look at water supply carefully
- industry technology has improved over the years
- if restrictions are to be placed on the gas industry in the GSH, the committee should also equally consider other current land uses in the area including grazing and ecotourism, and place the same restrictions on them
- area too sensitive to be restored
- should develop more ecotourism instead of gas development
- need cumulative impact study
- a lot of science does go into examining development proposals in the GSH

APPENDIX G: Development approval processes administered by provincial and municipal governments

Municipalities and Government Relations • ***Local development and servicing***	**Saskatchewan Environment** • ***Environmental Protection***	**Sask. Agriculture, Food and Rural Revitalization** • ***Crown land leases***	**Sask. Industry and Resources** • ***Mineral rights sales and drilling***	**Saskatchewan Culture Youth and Recreation** • ***Heritage resources***
• Development Permit Application • Site specific development review – • Decision to rezone lands if required (ES1 to ES2) • Public hearing for bylaw to rezone land if necessary • Adoption of bylaw and submission to GRAA for bylaw approval • GRAA circulates bylaw to provincial agencies and issues bylaw approval • Municipality issues development permit that includes site specific reclamation and restoration decision and monitors progress of development	• Project proposal submitted by proponent to SE. Either a letter of clearance is issued or requirement for Environmental Assessment to be undertaken • Proponent submits full EIA • SE circulates EIA to provincial agencies for comments • SE may require revisions to EIA or conditions including requirement for site specific review, restoration and reclamation • SE issues approval of EIA. Where a full EIA not required, a letter of clearance is provided • Follow up and monitoring of projects	• Leases crown land and monitors lease conditions • Proponent arranges for lease including negotiation with current lessee • SAFRR may require specific land restrictions to ensure integrity of the Crown land including restoration and reclamation • SAFRR encourages resolution between lessees and may authorize access	• Arranges for the sale of Crown minerals • Regulates and inspects drilling procedures for gas and oil development including well abandonment	• Reviews development projects to ensure heritage resources are protected • May require an Heritage Resource Impact Review

- **Processes may occur concurrently or separately according to the proponent's agenda.**
- **Proponents have direct access to agencies**
- **Coordination between agencies occurs**
- **Agency processes are complementary**
- **Each agency willing to facilitate opportunities**

Timing of RM Bylaw Review

- Timing is dependent on access to the land and completion of confirming the site specific locations so that the zoning map amendment can be properly prepared by the RM.
- Upon confirmation of the sites, the RM, at it next council meeting can initiate the bylaw amendment procedure. The RM's amendment procedure can be completed within 30 days if all materials were prepare and adopted by the RM's 2nd council meeting.
- GRAA would then have 30 days from receipt of the RM's request to issue a decision on the bylaw amendment.

APPENDIX H: Summary of options for land use and resource management in the Great Sand Hills that have been discussed by Review Committee

	Option	Pros	Cons	Comments
1	**Status quo** This scenario is based on current operations and the 1997-98 Great Sand Hills (GSH) Planning District bylaws. Land use would continue to follow the existing municipal bylaws and provincial regulations.	• processes are already established and proven • verification of what is working based on analysis and experience • allows for change. Ways of doing business have changed • gas industry conducts business in an orderly fashion • GSH Planning District Commission gives people comfort • there is consistency in three of the RMs • industry and cattle producers have come a long way in advancement of practices and improvements • industry, government and municipal departments are working together better • environmental groups are comfortable with the process • flexibility • onus on developer to show land can be re-zoned • have managed to raise awareness of process through the years • minimal disturbance versus reclamation. People have begun to see the cost/benefits of avoiding the damage in the first place	• no research on cumulative impact • all impacts need to be assessed • directional drilling not standard, but should be • should be some kind of zoning based on multi-well/single well • too many grandfathered mineral leases • does not address representivity of the GSH in Prime Protection Areas • requires clear definition of ES1 and ES2 zoning • long term monitoring is weak • does not provide long term protection • Prime Protection Areas are not clearly defined • no guarantee that when an RM follows the process it will lead to rezoning • process is lengthy and many projects put on hold because of it • no clear objective of what the land management is for • needs fine tuning • pressure on Commission from conflicting interests • a lot of misunderstanding about the process (public and companies) • not enough science to definite environmental integrity and biodiversity (i.e. How many acres are necessary for the protection of a species) • not enough flexibility for RMs (please note a contradiction that this also appears as pro as having enough flexibility) • local process versus provincial direction may conflict on occasion • changes in RM council may result in policy changes • may not be the best approach within the current provincial economy • lack of education of people working in the area • industry does not do a good enough job telling people about successes • need for industry to put the bar higher and work toward	Workshop

	Option	Pros	Cons	Comments
			it	
2	**Status quo plus adjustments** This scenario would allow clear definition of ES1 and ES2 lands. Could also consider eliminating ES1 and ES2 all together and classify all ES1 and ES2 lands as generally Environmentally Sensitive and address in an appropriately developed manner. Develop a mechanism to ensure no access to off-limit areas and clearly establish the parameters of those off-limit areas. Administrative changes would need to be considered as well, including: performance bonds, environmental monitors who report to the Commission or RM and funding to hire administrative services.	• opportunity to clearly defined zoning • consistency and certainty • perhaps more formalized structure for role of commission • industry should also be on the board • commission should get more help than currently does • the zoning would be able to stand on its own • any changes would involve all stakeholders • allows for technological advances • environmental monitors would examine all uses in the big zone • monitoring better although still weak in the long term • have guidelines for environmental monitors • other RMs may wish to participate by joining a commission • provides increased certainty to off-limit areas. Size and placement can provide representivity for the landscape like in Maple Creek • tools for land use planning already there • provides certainty • allows for revenue from areas that have been sterilized • simply process • monetary assurances through bonds • could have leaseholder involvement	• there would be a perception that the protection that is there now is lost. Right now the view is that ES1 areas are protected, and this would send negative signal • loss of control to RMs • ES1 rating helps to protect some lands • face potential disagreement over technological advances • no public input • no real deterrent to avoid damage • needs to be reviewed constantly • does not give long term protection • areas need to be determined and defined (need to establish the philosophy behind the parameters) • potential to fragment the area further (need to define off-limit areas). • if crown reserves are designated they can't be sold off in the future • no long-term monitoring • ownership of environmental monitor process. Some feel the government should hire and pay for monitors • lack of experience workers in the field. Some workers not familiar with this particular area • need to develop local knowledge • need more Industry and Resources government inspectors to provide ongoing monitoring • companies need to educate people at all levels • where and who are the people who will provide the money to make adjustments and study new definitions • criteria must be applied to all everybody	Workshop
3	**Expansion of Prime Protection Areas** There are currently 36.5 sections under crown reserve. To expand the Prime Protection Area, need to consider issues such as: ground cover, accessibility, topography, based specifically	• Prime Protection Areas are too small • need to preserve large enough Prime Protection Areas to protect unique features • need to protect with provincial legislation • crown reserve land should be held in perpetuity including surface and subsurface rights • Prime Protection Areas could be expanded to include ES1 lands • clearly define acceptable land uses within Prime	• disagreements over ES1 lands • limits industry • need to define Prime Protection Area (who will protect it? What will it be protected from? etc.) • once the Prime Protection Area is changed it will be difficult to change it back • expansion of Prime Protection Areas does not consider species at risk • how will accountability be enforced once Prime	Workshop

	Option	Pros	Cons	Comments
	on access, representative land formation, inoperable land. (One group discussed combining option B with Option C and to examine any undeveloped areas to start to start the process. Objectives for this combined option would need to be clearly outlined, defining issues such as what are we trying to protect, and what is our philosophy?)	Protection Areas • tools for land use planning already there • provides certainty • allows for revenue from areas that have been sterilized • clarifies issues • greater protection for the ecosystem • addresses way of life, biodiversity and other issues • helps industry • allows existing process to continue • allows for more diversity • may gain money from other industries on lands i.e. ecotourism • allows for more parameters to make decisions • allows for more appropriate definition of Prime Protection Areas • invasive plant monitoring • local involvement in Prime Protection Areas	Protection Area is expanded? • does not allow for true representative areas • targets only one industry (gas), other uses such as ecotourism and grazing not considered • could tend to fragment areas that need protection • funding that may be required (i.e. to hire environmental monitors • expansion of any Prime Protection Area has an impact on provincial revenue. It is a major loss to provincial coffers • lack of research means no protection for any species not yet known out there • ignores what is going on outside Prime Protection Areas • may stifle future development for certain areas by creating a negative perception • should be ground truthed • shallow water pipelining should also mean environmental conditions • what is already there can stay there, but no new developments • Prime Protection Area should mean no surface access for gas developments (slant drilling may be possible) • many different definitions of undisposed minerals • future investments could be jeopardized • may be sending message that business not wanted	
3a	**Increase protected areas that represent the character of the Great Sand Hills**	• once you increase the Prime Protection areas they would have to remain crown land forever • should allow surface use (but only certain types of compatible uses). No dugouts, water wells etc.	• must still protect from over grazing • not limit future development	Workshop
3b	**Modification of # 3a above** We have existing leases in ES1 areas that were issued before the strategy came into being. People with these leases can conduct recommended environmental assessments showing that development can take place, but bypass other activities.	• more science would be done • more fair to operators with existing leases • allows drilling without a zoning change	• massive revenue loss to the province and industry • does not take into account representative areas	Workshop

	Option	Pros	Cons	Comments
	People involved in those areas which are taken out of commissions in terms of potential for drilling would be compensated.			
3 c	**Add more to protect** Pure Representivity (natural ecological system biophysical) includes: vegetation, soil, topography, fauna, populations (breeding nominal), For this picture, representivity ignores economy.	• protects ecosystem integrity (theoretically) • Satisfies interest groups protection demands • More globally acceptable.	• financial cost to all government in all pictures. • cost to consumers, the public and the end users (through environmental mistakes). • sending a message to all businesses outside of Saskatchewan. High levels of opportunity cost/revenue to government lost. • high $ compensation to mineral right holders. • cash flow is cut in short term (delayed). • will there be a limit to what you could do to the land in the future (e.g. Farming). • RMs lose taxation dollars and the ability to govern the lands. • landowners (deeded) lose the right to do what they want (e.g. intensive activity – Branding corral).	RC could not reach consensus
3d	**Add more to protect** All not-disposed and non-freehold (all not-disposed minerals) lands would be set aside from development (gas and perhaps other)	• no need to compensate industries. • Expansion of PPA. • Cheaper than Picture #4b.	• financial cost to all government in all pictures. • cost to consumers, the public and the end users (through environmental mistakes). • not totally representative. • minerals being disposed or not should not be the deciding factor on whether to protect the land or not. • financial cost burdened on Clinworth	RC could not reach consensus
3 e	**Add more to protect** Some expansion of not-disposed mineral lands added to the 36.5 sections. Limits based on topography, vegetation or other biophysical information, areas of known endangered species, and bare earth. Confirmed by ground truthing. Try to get as much representivity as possible.	• More specific criteria based. • Better buy in from industry. • Less costly (No compensation). •	• financial cost to all government in all pictures. • cost to consumers, the public and the end users (through environmental mistakes). • only looks at not-disposed land	With acceptable modification this is a consensus by review committee
3 f	**Add more to protect** Super fragile areas history shows active dunes come and	•	• financial cost to all government in all pictures. • cost to consumers, the public and the end users (through environmental mistakes).	Work this idea into Option #3e

	Option	Pros	Cons	Comments
	go. Look at the physical environment that is inherently unstable		•	
3 g	**Add more to protect** Includes all undeveloped areas with provision to allow gas industry access when technology permits	• See #3d	• financial cost to all government in all pictures. • cost to consumers, the public and the end users (through environmental mistakes).	Criteria not clear for permitting access
3 h	**Add more to protect** Not disposed plus. This would be all lands that currently have not had minerals disposed plus inoperable areas added	• See #3c, #3d	• financial cost to all government in all pictures. • cost to consumers, the public and the end users (through environmental mistakes).	See Option #3d – no consensus. But could work inoperable areas into Option #3e
3 i	**Add more to protect** Reversion of mineral leases that have shown you can't get	•	•	Work this idea into Option #3e / confirm in future that areas are inoperable
3j	**Add more to protect** All current ES1 lands, disposed or not-disposed land.	• See #3c #3d	• financial cost to all government in all pictures. • cost to consumers, the public and the end users (through environmental mistakes). • minerals being disposed or not should not be the deciding factor on whether to protect the land or not	RC could not reach consensus
4	**Enhanced or changed role for formalized structures (Partnership / Super Commission)** Currently RMs and Planning District Commission administer the local process. Build new relationships between provincial and municipalities to manage land use in the area. Possibly create a formalized	• forces the province to define provincial interests (are the priorities it socio-economic or environmental) • committee must have representation from industry, residents and government • more decision making • easier to funnel information • takes pressure off RMs • cost share the environmental monitor • legalizes local decision processes • decisions consistent for region • single agency to deal with (one-stop shopping) • possible larger membership (additional RMs)	• may not be appropriate in today's world. In past five years we have extended local autonomy. This may remove some of that autonomy, and leave some feeling government is telling people what to do • may increase bureaucracy • removes public consultation processes. Current Planning Commission allows public input • will not be any better at solving the present issues • parameters and process must be defined • funding • time-consuming • advisory. Although advice usually followed, there is	Workshop

	Option	Pros	Cons	Comments
	board/body to determine issues, which would not preclude local decision-making consultation. Ask the question: should it be a provincial decision-making board or local/regional board? Parameters need to be defined for example, is the aim along the lines of the Manitou Land Use Plan (provincial authority), Qu'Appelle (corporate board combining provincial and municipal authority)or GSH Planning District Commission (advisory only).	• enhances current process by providing additional resources for research and review • staff with funding • more frequent meetings • expedites the process • protect what is producing revenue • revenue generated in the GSH through gas or cattle should be invested back into the area to keep it in good shape	nothing that requires this • should RMs be mandated in? • should RMs be able to opt out • fantasy commission would have an advisory on staff which would help in consistency in giving advice to new administrators, councils etc. • less re-education	
5	**Multi-use scenario:** This scenario follows the intent of the 1991 strategy. The original 1991 strategy identified the entire area for multi use purposes that meant it was available for gas development except in Prime Protection Areas. Prime Protection Areas remain protected from gas development. Lands would be available for development t subject to environmental protection. Possibly change zoning bylaw similar to Maple Creek.	• might speed up process • eliminates some zoning issues and pressures for council • potential increase in employment taxes and prosperity • process would be familiar as used in the rest of the province • would level the playing field • before anything happening various methods including slopes, topography etc could be used to identify areas that could not be developed	• cannot be a stand-alone. If do it does it has to be in conjunction with expansion of Prime Protection Areas • does not mean representivity • deals only with gas development • doesn't solve present problems • moving backwards in time • possibly more chaotic • commission and RMs would have less criteria to go by • compromises the existing ecosystem • places primary responsibility on EPP process • EPP process may be too weak to stand the responsibility • removes RM input • potential for more reviews and more lobbying. Every time there is anew use proposed it will trigger a new review	Workshop
6	**Start over – true socio economic and biophysical study** This means undertaking detailed research and analysis of all factors.	• would have the science on which to base decisions rather than assumptions • experience gained to date could apply to designing a better process • implies full review of all processes • could learn from previous mistakes	• means current process is not working • length of time to address issues would not meet current expectations and commitments • not developing resources would carry a high cost • high cost of obtaining research and data • what happens while the new plan is being developed?	Workshop

	Option	Pros	Cons	Comments
			• too ambitious	
7	**Custom design** a corridor where the minerals aren't sold so that slant drilling can be used. No fixed linear direction - can go anywhere to capture needed land class. No surface access clause in any mineral sales.	•	• financial cost to all government in all pictures. • cost to consumers, the public and the end users (through environmental mistakes).	Work these ideas into Option #3e
8	**Establishment of a GSH or native grasslands protection act** Legislated uses. Protection (from development) "was the intent." The general feeling was this would elevate control to the province and provide protection in perpetuity. Public hearings would be required and a land schedule would be needed. Under this scenario it was suggested that no new mineral sales in ES1 Lands be made, that timelines for existing leases would be set. The onus would be on the companies to identify developable areas and to allow leases to lapse in areas considered a 'no go'. In some areas there would be no development of any kind, increasing potential undeveloped areas, reducing revenue to province and reducing grazing, hunting and	• Limits the local government. • More globally acceptable. • Provides provincial certainty and ensures protection of provincial interests. • long term protection for the GSH • certainty for everyone	• financial cost to all government in all pictures. • cost to consumers, the public and the end users (through environmental mistakes). • limits local government and the public. • municipal interests may be impacted. • time consuming to address issue we have already spent a year on. • financial considerations • quantifiable science needed • takes autonomy away from local people • taxes to municipalities, as well as employment and other benefits could be taken away	RC could not reach consensus

	Option	Pros	Cons	Comments
	other uses. Some presently undeveloped areas would become developed.			
9	**Administration under Ecological Reserves Act/Regulation**	• provides a stronger level of provincial protection with greater flexibility in the regulatory processes to accommodate environmentally sustainable agricultural and energy development activities in the area • maintains local input into the management of the area • facilitates the creation of a management plan for the entire area thus an ecosystem-based approach • creates a long-term, cooperative approach to management of the area • addresses the issues surrounding cumulative impacts in the area • encourages the use of technologies that minimize surface disturbance in the area • satisfies requirements anticipated under the federal Species at Risk Act • Creates a model that could be applied to other areas with high land use conflicts. This model may assist in reducing land use conflicts in the future but at the same time risk inappropriate application of a model to situations where simpler solutions may exist	• local authority is reduced as provincial influence grows • it may be perceived by some groups as an inappropriate application of The Ecological Reserves Act • some environmental interest groups might charge that this is a 'sell-out' to industry • funding will still be required to develop a management plan for the area • inadequate resources available to provincial regulatory departments to enforce the regulations may lead to off-loading the enforcement responsibilities to municipalities • it may be perceived by the livestock growers and oil and gas industries that the province is moving contrary to its objective to reduce and streamline the regulatory encumbrances	
10	**Administration under Provincial Land Use Policy**	• provides a stronger level of provincial protection with greater flexibility in the regulatory processes to accommodate environmentally sustainable agricultural and energy development activities in the area • maintains local input into the management of the area • facilitates the creation of a management plan for the entire area thus an ecosystem-based approach • creates a long-term, cooperative approach to management of the area • addresses the issues surrounding cumulative impacts in the area • encourages the use of technologies that minimize surface disturbance in the area	• provincial land use policy may be too general to work for GSH area	